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COMPAO'S PROSPECTS

## STORAGE RENTAL MARKET EMERGES

Provider model evolves to meet \$8B demand



ment headaches. For a hefty monthly fee, storage service providers own, manage and operate storage infrastructures for their clients at remote data centers, similar to the way application service providers rent applications to

Talks keep verdict in

BY PATRICK THIS OPEN

trust case

Microsoft case 'on ice'

in the Microsoft Corp. anti-

In what may be a sign of im-

patience, antitrust trial judge

Thomas Penfield Jackson is

said to want to see the parties

reach a settlement by midweek.

But he has already extended the deadline once and could do

so again - if he becomes con-



JUDGE PUSHES SY JULIA KINO, CRAIS STEDMAN AND JAMES COPE FOR SETTLEMENT

counterparts in the automotive industry, four aerospace and defense giants last week unveiled an Internet-based trading exchange for the aerospace

The partners planning to The moment of truth is at hand launch the electronic marketplace by midyear are The Boeing Co., Lockheed Martin Corp., Raytheon Co. and U.K.hased BAE Systems PLC. To-

> goods and services from 37,000 Like the automotive ex-



Man of so ou over his data storage is a rel

joining Waltham, Mass.-hased StorageNetworks Inc. in a market that's still in its infancy. So far, storage service providers are drawing mostly small e-commerce companies

Storage Rental, page 14 AEROSPACE FIRMS

# TEAM FOR B-TO-B

Industry's conservatism could slow takeoff

Following the tailpipes of their

gether, the four companies anqually procure \$71 billion in

change, the aerospace market-Aerospace, page 91

# **NETDYNAMICS** USERS CRY FOLD

some users slam support, balk at migration KeyCorp in Cleveland spent says he isn't happy that the more than \$10 million

nior Vice President Bob Dutile and three years building Web applications that rely on Sun Microsystems Inc.'s Net-

Sun/Netscape benches application server;

Sun/Netscape Alliance elected to discontinue the NetDynamics product and base its forthcoming iPlanet Appli-Dynamics application server | cation Server on Netscape and development tools. So Se- product code.

KeyCorp's applications wo run on the iPlanet software unless they're substantially revamped.

But what has made Dutile and some other big NetDynamics customers even mor frustrated is the dearth of product information and the deterioration in support they say they have witnessed since Sun bought NetDynamics in July 1998. Sun joined forces to NetDynamics, page 14



THE DEPARTMENT AGITATOR TURNS APATHETIC. A programmer has a sudden need for long lunches and telephone privacy. The office slob discovers the sport coat. They're all signals that an IT employee is on the verge of bailing out. Our two stories identify the warning signs and offer advice from career development expert James Waldroop on how to keep your star performers.

Microsoft, page 16 history and decided and also believed at the 

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PO BOX 984 NH MROR NI 48186-8984 Supermarkets Online runs their ValuPage\* e-commerce site on Windows 2000 Advanced Server The reliable infrastructure enables them to service 800,000 users per week. Microsoft
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Windows 2000 Professional is easy to use, which minimizes training and maximizes productivity for small businesses. The old

of business no longer apply

And noithou do the -14



# PLENTY OF SERVER FAR





## **NEWS**

## BUSINESS

- ECONVERGENT, FLOYALTY announce the release of rival ooe-size-fits-all customer relationship management bundler
- START-UP OFFERS new service that lets electroni businesses identify Web visitors and customize pages accordingly.
- AIRBORNE EXPRESS poes wireless, replacing an analog radio system with real-time scanners to track shipments
- **HEALTH CARE GIANTS** launch an online exchange for industry buyers and sellers.
- **NOVELL DEMONSTRATES** new eDirectory features and shares its "one Net" vision.
- 12 PATENT OFFICE responds to criticism with plans to beef up Web patent reviews and distance itself from the Commerce Department
- 20 ASP IRONSIDE HELPS companies eoter and exit online marketplaces with ease.
- 24 CSX TRANSPORTATION equips locomotives with GPS software to track trains
- INTERNET DATA CENTERS set new standards with 99,999% uptime guarantees.

MORE	
Editorial Letters	30 31
How to Contact CW	
Shark Tank	02
Stock Ticker	
Company Index	90

- 36 FEDEX SHARPENS its focus on client satisfaction with Beta-Sphere's customer relationship management services
- 36 TRUCKING TAKES a sharp turn as the industry races to the Internet for logistics planning.
- INDIAN ENTREPRENEURS help one another get started and
- succeed in electronic business. 40 TRIBUNE'S CIO REVEALS what life is like at the Chicago publisher's IT department.
- 42 EXPERTS SHARE signs that employees are about to leave.
- GOOD WORKERS need incentives to stay on the job. Here are some ideas.
- 46 COMPUTERWORLD survey reveals that the best IT jobs this quarter are in e-commerce
- 50 JUST-IN-TIME LEARNING helps workers stay on top of the

# TECHNOLOGY

- 58 VENDORS SELLING appli catioo components are also of fering testing services to pick up design flaws in apps minted from prebuilt components.
- SECURITY JOURNAL 60 PAT FINDS he's no longer everybody's friend, now that
- he's trying to set and enforce policies HANDS DM
- COMPUTERWORLD editor Russell Kay installs Linux on his home machine and lives to tell about it. Then he tries out an impressive new mapping application from Microsoft.
- OVICKSTUDY 62 CACHE MEMORY provides high-speed RAM used by a computer processor for teins rary storage of information.
- EMEROINO COMPANIES 72 CLICKSSEND COM LETS mers upload massive data and graphics files just once to its online storage vaults and
- fast-paced world of technology. then lets others view and at their own convenience download the files securely
- 30 MARYFRAN JOHNSON
  - finds out how easy it can be to lose your online identity and urges IT to champion the antispoofing cause.
- 30 JOHN GANTZ encourages IT leaders to brace themselves for the onslaught of digital marketplaces.
- ALEX TORRALBAS believes that while the Internet widows communication, it also threat-
- ens free speech. 32 BILL LABERIS says the push for profits in e-commerce could greatly increase
  - MICHAEL CUSUMANO says software success in any country depends on supply and demand factors.

- THEY'RE ALMOST ALL A VARIATION ON 'MY BOSS IS A
- IERK,' THE IERK BOSSES WANT TO ASSUME IT'S ABOUT MONEY
- BECAUSE THAT GETS THEM OFF THE HOOK.
- JOHN PUTZIER, PRESIDENT OF NUMBER URCES CONSULTANCY FIRSTEP INC. OR THE GEASONS IT PEOPLE GIVE FOR LEAVING FOR ANOTHER JOB SEE PAGE 42
- 40 PAUL A. STRASSMANN writes that IT must behave ethically or it's inviting gov ernment regulation.
- 53 JOE AVER says negotiating with several suppliers rather than just one can help you get the best deal
- 92 FRANK HAYES takes a satirical look behind the scenes as Microsoft and the Justice Department continue to negotiate

# 'Wildfire' Finally **Getting Started**

Compaq's very late enterprise Alpha

OMPAQ Computer laved Wildfire enterprise Alpha server - originally due from Digital Equipment Corp. in mid-1998 - is finally close in shipping.

Compaq is planning a second-quarter Isunch of the 32 processor system, a company executive confirmed last week The first systems should become available in mid-May,

with volume shipments expected in the second half of the year, according to a report that appeared in "Shannon Knows Compaq," a newsletter published by Terry C. Shannon in Ashland, Mass.

The new servers mark Compag's first major high-end rdware technology upgrade since its acquisition of Digital nearly two years ago. The servers are the first uperades to Digital's 14-processor Turbo-Laser systems, which debuted

Wildfire systems, initially

server is close to shipping at last can run both OpenVMS and

Unix applications. Each 32-processor Wildfire system can be partitioned into smaller virtual systems, which will allow administrators to take the load off multiple smaller servers and consolidate it on one large Wildfire box. Clustering technology will let them tie multiple Wildfire systems into one giant configuration.

for increased scalability and neliability.

bined with the raw numbercrunching capabilities of the Alpha chip - should put

based on 729-MHz Alpha chips, help make it a per

performance leaders in the technical computing market, said Carl Ludwig a senior vice president at BlueSky Studios

Inc. in New York. systems from other vendors. The computer onimation studio used Alpha servers in creating an Oscar-winning film last year. 'The idea of using multiple processors and

son said Wildfire should finally give

applications is something that interests us," Ludwig said Wildfire's support for very large main memory is also crucial said Murshall Peterson, director of infrastructure

at Celera Genomics Inc., a beta tester in Rockville, Md. Celera, which uses Alpha servers for its gene sequencing work, recently placed an neder for two Wildfire systems, after benchmarking them against "Nothing came close to it. . .

They exceeded our expectation by a wide margin," Peter-

Compaq the ammunition it applying it to large rendering needs to compete in the ent prise market against IBM, Sun Microsystems Inc. and Hew lett-Packard Co., said Joseph Pollizzi, deputy head of the Space Telescope Science Insti tute in Baltimore.

"Wildfire should stop them from being constantly compared to Dell instead of IBM." Politzzi said. But he added that Compan's success will largely depend on how the company markets the server.

MORETHIS ISSUE For results of a Computer

# **ERP Vendors Admit They Can't Do It All**

Some are reselling other vendors' apps

Suddenly, SAP AG and other top enterprise resource planning (ERP) vendors are deciding that they might not be able to develop complete integrated suites of business applications on their own after all. Faced with stiff competition in a variety of new application areas, such as customer relationship management (CRM) and e-commerce, SAP and most of its ERP rivals are now

For example, industry sources said last week that SAP is close to finalizing a deal to resell call center management software developed by Nortel Networks Corp.'s San Jose-based Clarify division. That would be a major change from SAP's usual insistence on writing its own applications

looking for a little belp from

other software vendors

But it would only be the latest in a flurry of similar announcements made by other ERP vendors such as People-Soft Inc. in Pleasanton Calif. I.D. Edwards & Co. in Denver and Lawson Software Inc in

Meanwhile. Netherlandsbased Baan Co. said last week that it's creating a senarate CRM subsidiary. Company officials said the move sets the stage for a possible spin-off at that operation - just three years after Baan bought its way into the CDM business bu quiring Aurum Software Inc. For some ERP users, the promise of a seamlessly inte-

veloped by a single vendor is a powerful magnet because it would free them from the need to integrate different products. But Keith Bearden, CIO at dental equipment maker A-dec Inc. in Newberg, Ore., said the company has already given up on the idea of getting every-thing it needs from Baan.

More Than One Option

Baan's CRM software is too expensive for A-dec, Bearden said. And a product-data management application developed by the vendor was deemed too limited in functionality for a

SAP: Expected to announ a deal to reseil Clarify's call center software, possi bly this week

J. B. Edwards: Signed a deal in February to resell Siebel Systems Inc.'s full suite of CRM applications. spin Soft: Said last week

that it will use Com One Inc.'s tra software to build or

ect that is currently or hold, he added. Lockheed Martin Corp. in

Bethesda, Md., uses SAP R/3 at grated set of applications deseveral of its 17 business units and expects to eventually install the ERP system almost everywhere. The aerospace and defense manufacturer has also bought SAP's new data warehousing and supply-chain

planning applications. But Dick Beckman, an ERP program manager at Lockheed Martin, said there's no corporate edict to use SAP's applications. The business units make their own decisions, which results in a mix of applications at

"From an implementation point of view, in an ideal world. everyone always thinks a onevendor approach is the best way to go," Beckman said. "But of course, reality turns out to be something else."

And with more specialized software vendors enjoying big head starts in CRM and other areas EPD wandow are start. ing to realize that they don't have time to build everything themselves, said Bruce Richardson, an analyst at AMR Research Inc. in Bosto

"By the time they try to get something developed, the market for it comes and goes," Richardson said. "There are too many other legitimate choices Ifor users)."

# Wireless Alliance Launched

British Telecommunications PLC. AT&T Wireless Services Inc. and Microsoft Corp. plan to jointly conceive, develop and deploy new wireless applications around the world, building on alliances that already exist among the three

ne high-powered global collaboration announced in London last week will offer wireless services through Advance, a partnership that will allow customers to easily use cell phones anywhere in the world on next-seneration. IP-Microsoft said it will dedi-

cate a development team to creating the business and consumer mobile applications hased on Microsoft's suite of mobile data coffware that will take advantage of existing and future high-speed wireless data For example, a Microsoft

spokesman said, a field service technician could access illustrated manuals over his wireless phone and "view a video showing him how to do

The companies said they expect to begin trials of some of the services this fall. A commercial rollout is expected to take place soon afterward.

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# Cahletron Sells Unit

tor, H.H., said last week that it and sell off the nets age freen Digital Equipment Corp. The sale includes the NotVantage line of LAM metichen used by an

## Science Systems Buys Coda From Baan

an Co. on Friday said it has com ed the sale of its Code acco og software unit to U.K.-base nce Systems PLC for \$49.3 en in cash. The sale of Cods. which was announced two months ago, is part of the Hotherlands-based Baan's effort to receiver from dive quarters of losses.

## let Tax Panel Votes

ion that was not up to ly the issue proved unable to unified recom unified recommendation to se last week. Heeding a hirds majority vote for a rec-endation, the Advisory Comre, split 10-8 on the offi-

## Big Three, Others Join F-Business Forum

The nation's Big Three automater: the Asian Development Bank and the Mayo Medical Center plan to

## Microsoft Readies for Platforms Effort

oft Corp. last week sold it's realoper Groups for a joint

# ATDFADUNE Galileo to Revamp Its Global Travel Network

Will save up to \$20M a year with IP WAN

ALILEO loternational Inc., which runs one of the biggest travel relast week announced that is will replace its proprietary slobal network with an IP octwork built for speed and more predictable performance.

The IP network is expected to save Galileo \$15 millioo to COn million in annual operating costs over the legacy network, said Ron Thornhill, president and CEO of Quantitude Inc. Quantitude is a new wholly owned subsidiary of Galileo that will manage the network

## More for the Money

Thornhill, architect of the new wide-area network, said it was designed for optimum performance and reliability, a significant improvement over the patchwork legacy network and also cheaper to operate. Rosemont, Ill.-based Galileo said the new network would

# **CA Continues Buving Spree**

Federal electronic-business specialist Applied Management Systems Inc. (AMSI) last week became the latest purchase in Computer Associates International Inc.'s shopping spree for companies that have a footbold in the federal gov-

Financial terms of the acquisition of Rockville, Md.-based AMSL which is privately held. weren't disclosed, but all of the company's 100 service professionals will be joining CA, said

a CA spokesman. Last month, Islandia, N.Y.based CA paid \$4 billion for Sterling Software Inc., which holds substantial information technology implementation and services cootracts with the federal government. The U.S. Department of Justice changes in employee [data]."

500 travel service providers worldwide Construction, which is

scheduled to take place during the next three years, won't disrupt operations. Thornhill said. Network bubs are planned in

300 cities around the world and will employ network switches and routers from San lose-based Cisco Systems Inc. Quantitude said it as working

Early users happy to let others do work

BY CRAIR STERMAN Two application-hosting firms are about to release dueling sets of customer relationship management (CRM) software that they have pulled together from multiple vendors and

the merger last week. AMSI produces personalized employee benefits statemeets for thousands of federal employees.

Integration of AMSI's realtime employee benefits technologies with [portal and infrastructure technology from) CA and Sterling Software" will benefit users, said Michael Dortch, an analyst at Robert Frances Group Inc. in Westport. Conn.

For example, Dortch said, by combining technologies, including the canabilities of CA's neural net technology, the software "could warn employees when their benefits were going to expire or recommend benefit plan changes to a human resources director, based on

with AT&T Corp. to belo construct the serve 40,000 travel agents and network and to locate it's equipment io RON THORN ties. AT&T HILL: Calline's new network will

spokesmao Mike Cuno said terms of the deal aren't complete. The parties wouldn't dis-

close the cost of building the new IP-based network. Besides offering enhanced

# Hosted CRM Apps Due Soon

egrated for users The rival CRM bundles that eConvergent Inc. and eLoyalty Corp. plan to announce this month could limit users' ability to choose individual appli-

cations that best fit their busi-But that's an acceptable trade-off for some early users who said they don't want to face the challenge of trying to piece together multiple CRM

packages on their own. For example, Cricket Com munications Inc., a San Diegobased wireless phone company, is close to completing a deal to use eLoyalty's hosted CRM bundle to automate its call center operations.

The this-is-what-you-get nature of a preconfigured bundle is always a concern, but I'm relying on them for their judgment in selecting those Japplications]," said Phyllis Posner, vice president of customer operations and information

technology at Cricket. Posner wouldn't say how much time or money she expects to save by avoiding a do-z-yourself implementation. But she said Cricket should be able to get a CRM system up and running without having to hire consulting help or "a substantial IT staff of my own."

EConvergent, in Pleasanton. Calif., plans to announce its bundle this week. It's working with application vendors, inservices to Galileo's customers. Quantitude will also offer data, voice and fax network services to corporate customers in its bub cities in 106 countries. Thornhill said. David Endicott, vice president of rival Sabre Inc. in Fort Worth, Texas, said he had no comment on Galileo's

announcement except that most travel reservation networks, including Sabre's, are moving to an IP-based infra-Other Galileo comp include Amadeus Global Trav

el Distribution in Madrid and Worldspan Inc. in Atlanta, REANI INF

# cluding Octane Software Inc.

and E.piphany Inc., both in San Mateo, Calif. Chicago-based eLoyalty is due to announce its plans next week. The applications it's tying together include soft-

ware developed by Clarify Inc., a San Jose-based division of Nortel Networks Corp. (see chart below) Taste For Living Inc., a New York-based company that's due to launch a health and nutri-

tion Web site in June, plans to use eConvergent's bundle to automate its customer-service Creating a CRM system from scratch "could have easily

[meant] six to eight mooths of work," said Debra Langley, chief marketine officer at Taste For Living, "I'm not going to reinvent the wheel."





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# **Cyber Patrol Case Tests** Reverse-Engineered Apps

Injunction issued against sites that post 3 contested programs

PEDERAL RULING on a collection of programs that decoded Cyber Patrol filterior software is raising questions about the power of U.S. courts to force the removal of information from Web sites. The case could also have implications for the reverse-engineering of commercial software and attempts by companies to halt the practice, which they say damages the marketability of their products.

Abner Germanow, an Internet security analyst at International Data Corp. (IDC) in Framingham, Mass., predicted that the Internet community will find itself increasingly confronted by untested court rulings governing reverseengineering and the freedom to post contested programs on

"This is the beginning of many similar issues that busi-

nesses will face - it sets a precedent," said Germanow. The legal proceedings began last month when Mattel Inc. in El Segundo, Calif., parent company of Framingham, Mass. based Cuber Perrol filed a lowsuit in U.S. District Court in Massachusetts against the authors of the coback codecode and cphl\_rev programs. Those programs enable the re-creation of Cyber Patrol's list of blocked Web sites and news-

Copyright Charges The suit claimed that au-

thors Eddy Jansson of Sweden and Mathew Skala of Canada violated U.S. copyright laws. "Our issue is not the list: the issue was the reverseengineering and decompiling of software in violation of copyright and the posting [of] large sections of original source code and two executahies derived from source

code," said Sydney Rubin, a

spokesman for Cyber Patrol. On March 24, Mattel reached a settlement acreement with Jansson and Skala in which the authors agreed to turn over all rights to the software and an explanatory essay Martel then used its copyright to seek a court order against an estimated 50 mirror sites that linked to the contested software A week earlier, on March 17.

U.S. District Court Judge Edward Harrington had granted Mattel a temporary restraining order against lansson and Skala. Mattel sent notices of the restraining order to the mirror sites and requested that they remove the programs and turn over logs of people who had downloaded the

banned software. The American Civil Liberties Union, which represents three of the targeted Web site operators, fired back with a motion to suppress what it said were improper subpoenas The ACLU argued that the

for sites represented constitutionally protected speech and that the "anonymity of persons accessing Internet Web sites should not be breached."

"We argued that the U.S. court doesn't have any authority to enter injunctions because the U.S. copyright laws don't apply overseas," said Chris Hansen, an ACLU staff

Ruhin maintained that the injunction applies to mirror sites that post the program but not to those that post links to the mirror sites. IDC's Germanow said a ban on reverse-engineering would damage attempts to evaluate software for security holes and interoperability

"If you restrict software to only being used in a way that the vendor intended, you risk stifling a lot of innovation," Germanow said.

Cphack appeared to he released under the Free Software Foundation's GNU General Public License (GPL), which could allow unlimited distribu-

the entire puckage under GPI with Skala. tion of the program even if



ove program or face Mattel owns the convright lansson had attached the statement "Released under the

GPL" to the cphack program

because he wanted it to he freely available. But he said he never discussed releasing "Mattel got my rights to it,"

## Corrections

## Start-up Plans Personalization Services ECustomers.com's tools will let

businesses customize sites for visitors

Start-un eCustomers.com Inc. this week will begin offering centralized personalization services to enable e-commerce Web sites to immediately recognize visitors and customize pages accordingly, even if the shopper has never been to the particular site before.

The Austin, Texas-based company will sell its software along with access to a database of consumer profiles. The service, which will become generally available next month, will allow e-commerce sites to instantly recognize a visitor's profile, align it with product nes and customize the site

accordingly, explained leff DeCoux, founder and CEO of eCustomers.com

The consumer profiles begin as demographic and lifestyle "CyberClusters" that sren't personally identifiable. Site behavior during a visit is added to the profile, and other businesses using eCustomers.com will have access to the updated profiles, DeCoux said. Company officials didn't specify pricing but said revenue would come from a comhination of transaction fees. software and consulting ser-

micros force

The data-sharing arrange ment is unique. DeCoux said.

mer, customers will be able to log on to eCustomers.com and edit their profiles.

This is the first system out Up-front personalization imthere that gives consumers proves the chances that a visicomplete control of the data about them," DeCoux said. People can add more information about themselves, specify which companies to share data with or opt out, he said.

## **Boosting Purchase Rate**

ECustomers.com is aim to improve the low purchase rate among Web surfers. Only 2% of visitors to a site buy something, and only 5% buy again at that site, said Jamie Allen, vice president of development and operations at the

'What [marketers] haven't figured out is bow to turn first- choose to do so "

time visitors into buyers," said Richard Clayton, vice president of marketing at Angara E-Commerce Services Inc. in Mountain View, Calif., which plans to launch its own Web page personalization system next week.

tor, generally pressed for time. will huy said lack Sansolo, executive vice president of global brand direction at Eddie Bauer Inc. in Redmond, Wash., and an eCustomers.com advisor board member.

He said his company will "more likely than not" use eCustomers.com to help expand its knowledge of its cus-

"We know everything abou your purchase history at Eddie Bauer...but we don't know anything else about you," said Sansolo. "This allows us to learn more about you, if you

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## BRIEFS EMC Toos in

# Management

EMC Corp. enagged the top spot from IBM's Tiveli Systems Inc. in et, according to a Dataquest The Hopkinton, Mass.-based ensing sales, followed by oil with \$725.6 million. la, N.Y.-based Comp

## ioShio Gets Going

ns Niguel, Calif.-based

Wab sites using the GoShip ser-ice will be able to offer their online

## Cyberattacks Double

m 547 cases in 1996 to 1,154 d 390 of the cases in 1990 and

## Survey: Linux Lacks Tools

tools available for Linux. ling to a survey of 300 peoples es in Senta Cruz, Calif., a

# Airborne Retools Dispatch System for E-Commerce

Freight company to equip 17,500 drivers with new Motorola scanners and radios

TARORNE Freight Corp. last week launched a major restructuring of its nationwide wireless dispatch system, equipping drivers with wireless scanners to provide the com-

pany's customers with the ability to track their shipments in real time, like competitors do. Airborne, based in Seattle currently dispatches its 17,500 drivers with an aging analog radio system. Drivers must use acoustic couniers connected to public telephones to upload proof-of-delivery information from harvende scanners FDX Corp. in Memphis and

United Parcel Service of

America Inc. in Atlanta have

equipped all their drivers with

highly mobile digital terminals

capable of operating inside

buildings.

David Billings, Airborne's senior vice president of information and technology systems, said the company developed the wireless architecture to meet the time-sensitive requirements of e-commerce

## Real Time Ferential

Jeff Kagan, a telecom munications industry analyst, called real-time tracking information essential to any company that wants to compete in the e-commerce world. "It's a cost of entry. Customers will not even consider a vendor that does not provide real-time tracking and accountability." The new Airborne wireless architecture. approved by top management last week, calls AM

for equipping drivers ex

bar-code scanners from Motorola Inc. in Schaumberg, Ill. The scanner will allow drivers to upload proof-of-delivery information at the time of delivery, said Tom Zywicki, director of systems development at Airborne.

Airborne also plans to shift its wireless network, which currently uses a pastiche of compony-owned and leased circuits, to a new system leased from two

to Zywicki, Airborne is evaluating proposals from four bidders and expects to make a decision soon.

Zywicki said the compo has tenned Bell South Wireless Data LP in Woodbridge, N.J., as an interim service provider in a number of key markets, including Seattle and the Washin D.C., area, Bell South will pro vide airtime and equip drivers with between 5000 and 6,000

RIM 950 terminals tion (RIM) Inc. in Waterion Ontorio Airborne didn't dis close financial details of its new wireless

architecture. But Zywicki did say the com pany is looking at "airtime costs of between \$15 and \$35 per driver. per month." That would put the annual airtime costs of the new network at between roughly \$3 million and \$7 million.

# Health Care Vendors to Launch Internet Exchange

Manufacturers to link purchasers with suppliers

Five major medical manufacturers have teamed up to form an Internet exchange that will link health care buvers with suppliers. But while such Webbased initiatives can belp providers cut costs, the slow-moving health care industry may

not be ready to get onboard. The partners include Johnson & Johnson in New Brunswick, N.J.; GE Medical Systems in Milwaukee: Baxter International Inc. in Deerfield, III.: Abbott Laboratories in Abbott Park, Ill.; and Medtronic Inc. in Minneapolis. They plan to launch the exchange as a sepa-

that will be up and running by the third quarter Health care providers spend an average of \$60 per non-Internet-based purchase order. according to Mark Anderson.

an analyst at Stamford, Conn.based Meta Group Inc. and a former hospital CIO. Conducting the purchasing transaction via the Internet could shave costs by as least \$24 by reducine paperwork and automatine processes, he estimated. Hospitals could use the exchange to order medical supplies online, change their contract terms and check the status of their orders from a single online source. But buyers must still make contract agreements, including pricing, with

the manufacturers themselves. The biggest potential sav-

ings for bealth care providers switching to an Internet-based purchasing system may be time, said Anderson, While some health care providers today can send medical supply orders via electronic data inhave to follow up by phoning

or faxing suppliers, be said. By climinatine a lot of mum al steps, providers conducting transactions on the Internet may be able to save 40% of the time it takes to complete a purchase order. Anderson said. Arthur Collins, president of Medtronic, said be booed the exchange would serve as a uni-

versal standard for purchasing online for the health care industry. But that may be a tall order, as the venture faces heavy competition from existing operations. And establishing a standard

means persuading buyers to change their way of doing business, which won't be easy, said Eric Brown, research director at Forrester Research Inc. in Cambridge, Mass, He predicted

that exchanges will eventually experience some segmentation. as users gravitate toward specific exchanges because they cater to, say, large hospitals vs. small ones or handle certain

types of medical supplies One of the exchange's co petitors, Medibuy.com in San Diego, allows purchasers to select the best-priced product, said Anderson, However, that kind of service is aimed more at physician groups than at hospitals, which sign long

## term contracts, he said b JUST THE FACTS Partners in Health Care

Web exchange will: mintally serve U.S. customers, then enpand globally by 2001

 Provide technology support from (E) Global Exchange Services in Galthersburg Md. Q Technologies in Dallas; Ariba Inc. in Mountain View, Calv., and IBM m Re based in Obrzeco. Fach company will hold equal status in the first Pinennial. Notice were not disclosed





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FRONTLINE PARTNERSHIP

Microsoft

COMPAQ

# **Novell Moves Directory Services Beyond the Firewall**

Novell Inc. raised the ante for directors

At its annual Brainsburg event in Sah tion of new eDirectory features and Lake City, Novell outlined its Directory-

able NDS into an e-commerce platform.

sion of how the company intends to tie Its offerings around the Novell Direct

ry Services (NDS) eDirectory. In CEO Eric Schmidt's "one Net" vision (see interview, page 29), as outlined in his keymote speech, the directory provides organizations a way to bridge the ear between intranet and Internet, giving customers and business partners secury access to internal systems.

"I don't know how double it is, but it makes a lot of our problems go away," said Patrick Pickens, a network engineer at Fluor Corp., a \$12 billion global engineering services company in Aliso Viejo, Calif. Michael Hoch an analyst at Ab-

erdeen Group Inc. in Boston, called the promises a "clever message," but said Novell will have to prove it can deliver Toward that end, Novell previewed eDirectory-related technologies at Brainshare, most of them due in prodacts by year's end (see chart) Users raved about the Domain Name

Server Federation feature that will be added to NDS this summer and will allow user rights to be assigned to groups from other companies. "We have billion-dollar deals where we work with customers for the length of the project." said Fred Leakeas, an information sys tems operations manager at Intermountain Gas Co. in Boise, Idaho, "You have to give these people access to your system. Sessions on the coexistence of NDS

with Macrosoft Corp.'s Windows 2000 and Active Directory were popular at Brainshare. "I think it's wise of Novell

de Sign en 2.0; E sign-on to any app. warlow: Backs up files on V

DirXML: Direct SSLizer: Appliance adds authentica tion and encryption to any Web site.

to integrate with [Active Directory] rather than be a competitor," said Jim Sheats, a business systems adviser at Federal Express Corp. in Memphis. Novell currently ships its products on platforms including NetWare, Windows NT and 2000, Solaris and Linux. Attendees found pluses and minuses in Novell's marketine after an overhool of the department but year "The work [Senior Vice President] Steve Adams is doing to unify the company's approach to marketing is impressive," said Hoch. But Huntington, N.Y.-based NetWare reseller Bruce Waring said Novell needs to communicate more with the peneral public. "We talk to our customers about Novell, but they go home at night and see Where do you want to

go today? on TV." said Waring.

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# Wells Fargo Abandons NetWare

Wells Fanto & Co. in San Francisco is moving to Windows 2000. As a part of this process, it's abandoning NetWare and Novell Directory Services (NDS) in favor of Active Directory, a technology many analysts say is unproven.

'One of the reasons we stayed with Novell [NetWare 4.11] as lone as we did was because NDS is a fine product," said Patrick Collins, vice president and engineering manager for Wells Fargo's Wholesale Banking Group, Collins' group will move its file and print services, e-mail and directory as well as 5,000 desktops to Windows 2000 by the end of the year. The company also has applications running on mainframes. several Unix systems and Windows NT. Some of these will move to Windows 2000 over time. Collins said.

We just decided that, to simplify things, it made sense to go with Active Directory," said Collins. He said he befigures is will be envior to create a cloudslen-on for users with Active Directory "Toxi many passwords" is the biggest user complaint, said Collins

But Charles Rutstein, an analyst as Forrester Research Inc. in Cambridge, Mass., said the bank's move was probably the result of intensive Microsoft woolny. "This is a tartir Microsoft has used for many years with large customers: not only offering a good deal on the software, but also making the transition very easy for them by throwing in consulting," said Rutstein. Collins confirmed that Microsoft offered free consulting in the overall agreement

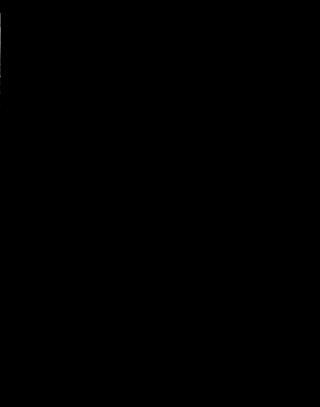
Rutstein said he believes that despite Wells Fargo's decision to migrate, coexistence between NDS and Active Directory will be the best approach for most enterprises. "While there is some additional pain in running two directories. there is also pain in ripping one out and in using an unrested product," he said.

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# **Novell Moves Directory Services Beyond the Firewall**

Novell Inc. raised the ante for directory services last week with its demonstra-

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products in hopes of turning the vener-able NDS into an e-commerce platform. tion of new eDirectory features and Lake City, Novell outlined its Directory-

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## Secure Web Reports

read Web content creation ners. It also anced an alliance with Allaire

CA Serverless Backup ical bricks and mortar to their dia, N.Y.-based Computer clicks a new Internet bank -Claritybank.com - has no d ARCservelT, a serverless plans at all to expand its physiup and recovery product for cal presence.

> what used to be the First National Bank of Uvalde, Texas. It will remaio a community bank but has been beefed up with a customer service center for online clients. It is a wholly owned subsidiary of Purchase, NY-based Clarity

Holdings Inc. "We have no plans to grow physical locations," said Sheila Keegan, a company spokeswoman. "We feel very confident that the consumer who is

# New Bank's Net-Only Vision Bucks an Industry Trend

Touts online hill payments, wireless

> T A TIME when most Internet only banks are looking for ways to add some phys-

Claritybank, which opened its virtual doors last week, has only one physical location -Business customers can also find staff, office supplies or equip-

"In the long run,

and convenience to their life will also use it for their banking decisions." To attract contomers to a

access and more bank with on tellers. Keegan said. Claritybank.com promises the lowest rates in the country on single-family mortgages, the highest rates on oneyear cettificates of deposit and

three-second creditcard approvals - in addition to free online bill payment, a discount brokerage and full wireless access through pagers, mobile phones or Palm handheld devices.

ment, she said.

However, some ana lysts criticize Clarityhank and other pure Internet plays for ignoring the bricks-andmortar world.

en Research Inc.

to make a profit with no physical branches is Alpharetta Ga-

net banks give their customers a choice of channels, Stiffler The sole Internet-only hank

said Dana Stiffler, an analyst at Newton, Mass-based Meridi-The most successful Inter-

has only 77,000 customers after four years in business, according to Richard Bell, an analyst at Needham, Mass.based TowerGroup.

## Behavioral Issues

"There are very, very deeprooted behavioral issues in the way that people do banking," Bell said. Thirty years

after ATMs were introduced, roughly a third of all bank cus tomers won't use them at all, and only onethird of ATM users will use them as a de pository vehicle." But there's mom for

Internet banks as a second bank, according to George Barto, an analyst at Gartner Group Inc. in Stamford, Conn. "A pure-play Inter-



net-only bank can survive and thrive, recognizing that it's not going to get all of its customers' business," said

## pert peer-to-poor remote copying and native Fibre Channel co-Embarcadero Uporade

IBM SAN Investment

oducts and services. It issueched a ne Shark model with a 64-bit SC processor, 1666 of cache and

ect buses. IBM won't sup-

ed precedures and triggers and otem languages, or they can penalste versions for dram-

in a \$20 billion deal, SEAGATE TECHNOLOGY CORP, in Scotts Val-iny, Callf., last week returned to the private sector through an investor up and Veritas Software Corp. RS CORP.'S SAAB CARS USA

# **Patent Office Plans Reforms** Aimed Partly at E-Commerce

The U.S. Patent and Trademark Office (PTO) last week announced plans to improve the quality of its much-criticized Web patens reviews and to virtually split from its parent agency, the U.S. Department of Commerce

In a presentation to memhere of the San Francisco Intellectual Property Law Association here, PTO Director O. Todd Dickinson said the agency will become a "performance-based organization."

That means the revenuegenerating agency will act more like a business, with managerial flexibility and control over its budget, hiring and procurement.

However, Dickinson said. the agency still faces a budget crunch that won't improve this year. He said one-third of the PTO's \$1.2 billion revenue from filing and processing fees currently gets appropriated to other asencies. "The practice is limiting our ability to hire examiners," he said, "The ap-

propriation process negatively affects our work. The situation must be fixed." A bill introduced in Congress last month might help. HR 4034, introduced by Rep.

Howard Coble (R-N.C.) and already passed by one subcommittee, would let the PTO keep all the fees it collects. Dickinson also outlined the PTO's plan for additional layers of review before granting

methods. The PTO has been criticized for granting broad patents on e-commerce techniques such as Amazon.com

Inc.'s I-Click ordering process. "Patenting of e-commerce technology has become controversial," acknowledged Dickinson. He added that the con troversy centers on the perception that business methods can't be patented and that the PTO is understaffed and undereducated when it comes to high-tech issues.

## Office Won't be Abolished

\*No one is calling for abolition of the PTO," said Harris Miller, president of the Information Technology Association of America, a trade group in Arlington, Va. But he said the patent review process is flawed and has vielded "fairly significant cases" of question-

Gregory Aharonian, the publisher of the "PatNews" elec- is ridiculous," she said.

tronic newsletter and a critic of the PTO, called Dickinson's plan "a farce.

In order to function as a business. Aharonian said, the PTO would first need competi tion, which it doesn't have. Second, it would need to be able to accurately gauge customer satisfaction.

Although the PTO regularly cites surveys showing high satisfaction among patent applicants, Aharonian said the PTO's true customer hase is businesses, and individuals who must compete with putent holders

Damela Banner a Wash ton patent lawyer, said the changes in the patent process are "generally a good thing. They aren't earth-shattering but they add more review. which is good."

She said the prospect of the PTO getting to keep all its fees is an essential element of reform. "This siphoning of funds

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Dynamics Web application. "And

I'm having a hard time bringing my

The Home Depot's Mile Ande

son, vice president of IS, said he had also gotten the Solans suggestion, which did not sit well with him

self to go with Planet, just b

of the way I've been treated

## **NetDynamics**

co-develop software with Netscape Communications Corp. later that wear (The company has started calling itself iPlanet F-Commerce Solutions )

"They didn't keep us in the loop at all on where they were going with their products," said Mike Anderson, vice president of information systems at The Home Depot Inc. in Atlanta. "Nobody knows what they're doing. It's almost like a little secret society, and it ticks

me off." Home Depot used NetDynamics to develop and deploy applications for wender secvice, field reporting and information systems time tracking. But because Anderson couldn't get solid answers from Sun on product plans last spring. he told his developers to build their own servlet-based architecture.

## Unanswered Questions

Anderson said he will proba-bly try iPlanet, testing the conversion routine that he has been told will help move Net-Dynamics code to the iPlanet programming model. But it reas to be seen if code that had been fine-tuned for Net Dynamics will work just as well with iPlanet. "If it takes effort and I have to do a lot of rewriting, I will probably take those applications and keep the functionality the same but rewrite them in our homepropen [ system ]." he said.

KeyCorp, which has about 100 NetDynamics development licenses, planned to mi grate to the latest and final edition of NetDynamics. Instead, the bank started evaluating other application servers earlier this year, after spending three months trying to get answers on why core components were dropping off-li

or slowing down, IPlanet is 'just another candidate now." Outile said. "Sun was definitely one of our top vendors last year." Dutile said. "That obviously now

is called into question." That doesn't surprise Daryl Plummer, an analyst at Gartner Group Inc. in Stamford. Conn. He said be has spoken with clients who are looking at other products, "I know [iPlanet]

## AT A GLANCE Server History

July 1, 1998: Sun buys NetDynamics Inc. New 24, 1998 Netscape Sun Microson terms deal to conthy develop and market e-commerce growings announced March 17, 1999; I/OL acquires Netscape writing from scratch

July 1999: Sun-Netscape Allance rebrands products as "Planet May 2000: Planel Application Server 6.0

has lost some customers and not gained customers they could have gained." Saniay Sarathy, (Planet's director of application server marketing, said iPlanet logged some 50 new customers this

quarter and counts NetDynamics customers in the beta program for iPlanet 6.0, which is due to ship next month. "If customers are complain-

ing, we're certainly going to listen to those complaints and do what we need to do to make them happy," Sarathy said. Not every customer is unhappy. Steven Durflinger at Excelergy Corp. in Santa Monica, Calif., said an outside company spent two weeks at his firm "on the alliance's dime" to deter-

Continued from page 1

# Storage Rental

capitalists would rather have dot-coms turn a profit or invest in strategic initiatives than create in-house storage infra structures, said Adam Couture. an analyst at Datamest in Lowall Mary

Dataquest predicts that the storage service provider (SSP) market will explode from \$10 million last year to \$8 billion in 2003. But analysts said it will still be a challenge for SSPs to move beyond dot-coms and gain the trust of larger corporations that have their own tech-

nology infrastructure. One issue is that the vendors offering this service don't have track records, said Jim Porter. an analyst at Disk/Trend Inc. in Mountain View Calif. "They don't know if they'll be around in two or three years. ... God knows what happens to the

mine what needs to be done to convert NetDynamics applica tions. "We were one of the testcase customers" said Durflinger, who has spoken at Sun events in the past. "The answers I have been given make me feel it's worth sticking with illimet he added "There will be some rewrite involved. but it will be less painful than

To varying degrees, early

adopters of any vendor's application server will pay some price for having adopted the cutting-edge technology before it reached a mature state They built applications to their vendors' proprietary models. Now they face migration work as vendors move to a common programming model - Sun's Java 2 Platform Enterprise Edi-

tion (PPEE) But NetDynamics users could feel more pain, because the code base for their product isn't being carried forward to the new illianet server

Last May, Sun and Netscape announced that they would combine the best of their application servers. But in July, they said the newly branded iPlanet product would be based on Network Application Support code, because it was further alone in supporting the important IZEE improve-

data" if the vendor goes out of business he said

Jerry Lynch, director of ope ations at the Online Computer Library Center in Dublin, Ohio, said he's "fascinated" by SSPs but needs site security guarantees, uninterruptible powersupply protection and "enough

of the right names" involved. Some heavyweight yendors are dipping into the SSP arena. Storage Technology Corp. in Louisville, Colo., last week, with Great Hill Partners LLC. launched Managed Storage Interoational, a separate firm that will offer data storage services such as storage-on-demand and server and PC backup.

But the overall lack of expe-

SION SAR

## Users: Support Already Suffering eny spent \$650,000 on its Net-

The NetDynamics application s er may be supported through the Sun/Netscape Planet E-Comthrough 2002, but some cus-

trouble getting assistance. One major retailer, for example was told it would have to wait a week for help when its Web appli cation went up and down after re ceiving a high volume of hits the day efter Thanksgiving, according to the retailer's former CIO

Mat Stickler, director of inf tion technology at the natural gas subsidiary of PG&E Corp., corr plained that support has warred for NetDynamics on Hewlett-Packard Co.'s Unix platform. He said his salesman often doesn't call back and support staffers som suggest that he switch to Sun So lants, which we didn't find all that

helpful, since we had over a half on dollars invested in HP-UX. The bottom line is, NetDynonics is dead. I'm going to have to switch," said Sticker, whose corr

users nixing the idea.

they like turning over their

storage management woes to

gy officer at Maynard, Mass-

based Computer.com, moved

the company's storage to Stor-

ageNetworks in preparation for this year's Super Bowl ad

campaign. The online retailer

stores member information

commerce transactions and

lose at a StorageNetworks data

Jordan Olin, chief tech

someone else.

ments that customers wanted right one at the time," said Carl "To actually take two code bases and 'munee' them together would have been too difficult," Sarathy said. "Each tectical decision that Sun has made seemed to be the

Zetie, an analyst at Giga Information Group Inc. in Cambridge, Mass. "But the end result has been to leave many NetDynamics customers in the cold."

rienced SSPs has left some center in Waltham, Mass. But using an SSP is pricey. Olin said Computer.com pays

Brian Dunnam, director of systems engineering at Dot-20% to 40% more per month Planet.com Inc. in Duluth, Ga., than when its storage was inentered into contracts with house. According to Storatwo SSPs, which he declined to geNetworks, the average name, canceling one contract and not extending the other. monthly cost for managed storage per terabyte is \$50,000. Computer.com now has 200GB "We have a very dynamic environment that changes on a of physically mirrored storage. moment's notice" so the SSPs Vet Olin said the idea of a had a difficult time managing company watching over his the storage environment, Dundata storage is a relief. Before, nam said. The Web-hosting "we didn't run fast equipment. firm now manages its storage and we didn't have an expansive storage infrastruct But other customers said [Now] we don't have any has-

sles to manage it," be said. Eventually, large corpora tions may be forced to turn to SSPs because of problems with staffing, scalability and management costs for storage, said analyst Michael Peterson. president of Santa Barbara, Calif.-based Strategic Research Corp. "[Corporations] may be leery, but they'll have no choice" if these trends contin-

ue he esid \$

bocause he has already inves \$150 000 in HP servers When he couldn't get a timely resolution to one problem, he said, he finally called Sun President Ed Zender Each one of the users said they ceived better suppo Dynamics poor to the Sun acqu

tion and the formation of the Sun letscape Allence. Sansay Serathy, Planet's direc for of application server marketing wouldn't comment on specific in-

stances of problems. But he said support has always been and will tirrue to be a top priority and have increased. He couldn't provide specific figures on those in creeses. - Caval Silves



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# MasterCard, Visa Vie For Wireless Victory

MasterCard claims lead in wireless e-commerce; Visa says standards needed

ASTERCARD International Inc. last week asserted that it has taken the lead over rival Visa International Inc. in the race to turn wireless e-commerce into a reality

Both companies have spent the past six months signing alliances with key wireless soft ware and bandware vendors in anticipation of a new world in which consumers use "digital wallets" to make payments online or at stores. The digital wallers, which

come in the form of either evetem." said Bill Fitts, director

embedded in smart cards or handheld devices, allow consumers to pay for online purchases easily. Art Kranzley, a senior vice

president at MasterCard in Purchase, N.Y., touted the company's agreement last week with Toronto-based 724 Solutions Inc. - which has developed huthly secure mobile payment software - as a sign that MasterCard has "taken the lead" in payment ser-

vices for wireless customers. But Mangaret Reid, vice president of multifunction platforms at Foster Ciry Calif. based Visa, countered that it's too early to declare a victor

She said the focus should he on practical issues that are of paramount concern to consumers and merchants, not on capturing a technology lead. The consumer has no desire to tote around multiple methods of electronic payment, nor does the merchant want to install a variety of a systems, Reid said.

That means standards, not technology, will rule the day, "We're a great proponent of standards and have worked in the past with MasterCard. ... But in wireless, it is almost too

early, as there are comorganizations with different standards. Ultimately, one or two of those standards will work out." Reid said 9



Continued from page I

## Microsoft

vinced that both sides are mai ing progress, said one source close to the case. But be won't let talks go on forever.

The judge's verdict is "on ice" and ready to be delivered. and there's little doubt be will rule against Microsoft, say sources. If no settlement is reached, it will take two or three years before the appeals

pencess is exhausted. But a sertlement could bring immediate changes that could be both a blessing and a curse said conporate users and analysts. Both sides have been meet ine in Chicago with a court-

appointed mediator and have son to settle. Microsoft otherwise risks that the judge's verdict will be used against it by private litigants. For the government, no settlement ans the remedies it seeks may be delayed for at least two years or more - a distant future in technology. An out-of-court settlement

is expected to require Microsoft to guarantee exposure of its operating system application programming interfaces (API), which are the links that let applications work with the operating system, along with opening some of the Windows source code so third-party developers have access to the underlying Windows technology

The only thing that is really ing to help any developer is if they open up the operating of application development at Continuum Health Partners Inc. in New York. With an open Windows

source code, developers would have new options to improve performance of applications on operating systems, said Fitts. "Third-party software will get

better," he said. But if developers change operating system source code to

ment is possible. The judge is gi wir to attempt to reach a remedy. lde. The judge is giving both sides o

ware," be said.

poly and says it has violated the law in order to preserve that

no its stock orter of late

act abope: The judge is deciding this case in firee; First: Findings of fact. Mant: The words: or conclusions of law.

ales: Jackson's verdict won't include re-

customize their applications, it velopers won't change the fact could create system conflicts. that applications drive the according to Alan Sauerbrei. choice of operating system, information systems manager said Dan Kusnetzky, an analyst at Wright Brand Foods Inc., a at International Data Corp. in food processor and distributor Framingham, Mass. Microsoft applications, esin Vernon, Texas, "One vendor

makes a slight change, and it pecially its word processor and clobbers another vendor's softspreadsheet, which have more than 90% of the revenue in And ensuring that the APIs those markets, were designed aren't wood by Microsoft to the to work with one another and disadvantage of third-party deare linked to specific features on the Windows NT and 2000 servers he said

### Breakus Pres and Cons. A settlement in the Micro-

soft case that doesn't break up the company has always been possible - but isn't likely. The toughest problem in crafting any settlement is preventing Microsoft from doing to other companies what it did to the former Netscape Communica

tions Corp., said legal experts. \*Clearly, the browser is a prime example of a tactic that Microsoft has used [to attack Netscape), and I'm confident the government would not settle a case unless there were some way to resolve issues like this in the future," said Stephen D. Houck the former lead trial counsel for 19 states who is now in private practice at Reboul, MacMurray, Hewitt, May-

nard & Kristol in New York. Many of the government's legal claims against Microsoft and the issues that may form the basis for a settlement stem from the company's treatment of Netscape. The sovernment has around that Microsoft dolayed giving Netscape access

to Windows 95 technical information, which hurt Netscape's ability to quickly release a browser for that new system. It has also argued that Microsoft used its operating system pricing power to discourage PC makers from including Net-

scape on their desktop systems. The most difficult issue penotiators may be facing is addressing the claim that Microsoft "tied" the browser to the operating system with the intent of crushing Netscape, experts said. The government could seek restrictions on Microsoft's ability to integrate applications with the operating

system. \*Presumably Microsoft wouldn't be able to integrate these applications without making them easily removable. akin to Velcro," said Hillard Sterling, an attorney at Gordon & Glickson PC in Chicago.

Critics are doubtful the go ernment will accept any Microsoft proposal. "You [have] got to be [suspicious] when the defendant in a law enforcement action proposes his own punishment," said Ken Wasch. president of the Software and Information Industry Association in Washington, which has argued for a breakup.

But Stanley Liebowitz, an economics professor at the University of Texas at Austin and an opponent of the government's case, said lackson none clear risks with a breakup and that may be why he is posting for a settlement. "He doesn't understand this market that well, and he knows it," he said. 0

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# Supplier Network to Ease Access to Online Exchanges

Package designed to let users into multiple markets

NSIDE TECHNOLOGIES INC. IN Pleasanton, Calif., today anpounced software and services designed to offer suppliers plugand-play, real-time data integration with multiple online exchanges. The Ironside Network is significant because it gives suppliers a way to quickly enter and exit online marketplaces without creating separate back-end

links to each exchange Ironside provides basic plumbing, via the XML content-tagging language, that lets suppliers upload real-time data from their enterprise systems to various online exchanges - regardless of the commerce protocols used by a particular exchange or the enterprise software at the user company.

The Ironside Network initially will support exchanges using XML-based protocols from Mountain View, Calif-

based Ariba Ioc. and Walnus Creek, Calif-based Commerce One Inc. It will eventually also support exchanges running on software from Moai Technolories Inc., Intellievs Electronic Commerce LLC and RightWorks Corp.

"Ironside provides a very convenient on-ramp for suppliers," said Albert Pane, an analyst at International Data Corn (IDC) in Framingham, Mass. This is especially important for sup-

mond, Va., which sells to customers across several industries. "We deal with electrical distribution

and electronic distribution. The two businesses are entirely different, so we'll be on more than one exchange," said Frederik Wenzel, chief financial of ficer at Weidmuller

Rick Holden, president of I. L. Ham mett Co. a \$200 million school supplies company in Braintree, Mass., said he also expects to be trading on more than

Bus Holden said he can know for sure which exchanges yield the greatest benefit only by actually trading on them. As a result, "I need the ability to plug in and unplue quickly." Holden said. The Ironside Network is free for any

supplier running the company's Ironworks 4.0 product suite. Other suppliers can link into the network for a setup fee of \$25,000. After connecting, all

## JUST THE FACTS Ironside Network

exchanges in real time walls single entry point How long to implement: 20 days How much: \$25,000 setup fee for new users

 Free connection for current users Subscription fee of \$500 per month m \$1 per immertion

users pay a monthly fee of \$500 plus \$1 per transaction. Ironside said the typical implementation time is 20 days to integrate any manufacturer, distributor or other supplier into the Ironside Network, giving a company access to an

unlimited number of online exchanges. Pang pegged the current number of online exchanges at about 350. By next year, however, IDC forecasts that that number will grow to more than 2,000. According to Forrester Research Inc. in Cambridge, Mass., companies that use exchanges now trade about \$19 million in goods and services on one to two online exchanges. But by the end of next year, the average company will trade about \$49 million in goods over four exchanges, Forrester says.

# **Private Sector Is Envy of Fed CIOs**

Government IT leaders aren't always in the loop

BY PATRICK THIBODEAU

agency's success

Unlike their private-sector counterparts, federal CIOs often lack access to top management and may be treated primarily as technical support managers. It's a disparity that's worrying some federal officials, especially as information technology projects and good information security practices become increasingly critical to an

Some private-sector CIOs last week urged Congress to improve the status of federal CIOs. \*Empower the CIOs in the federal

government to effect and motivate change, as we have been empowered in private industry," urged Suzanne Krupa. CIO at Rowe Cos., a Salem, Va.based home furnishings company.

In a report last week, the U.S. General Accounting Office (GAO) said the key to improving federal IT projects may lie in giving federal CIOs the same kind of power and recognition that strain IT managers, said McClure.

their private-sector counterparts have. There is a disparity from agency to agency in the organizational placement and authority of the ClO," said lim Flyzik. CIO at the U.S. Treasury Department. Flyzik recently testified before a House subcommittee examining the issue.

Private-sector CIOs can work directly with the CEOs to make immediate decisions," said Flyzik. "Public-sector CIOs must plan well in advance and work through various layers of government to achieve such change

The House subcommittee on government management, information and technology, which held the hearing, was told by CIOs from both the public and private sectors that CIOs need to be recognized by top executives in order to be effective

But in its report on CIO management practices, the GAO found that many CIOs at federal agencies aren't included in the executive decision-making process. Moreover, information management is still often treated as a technical support function rather than a strategic asset, said David McClure, a GAO associate director

Federal CIOs also face unique challenges. The CIO may be dealing with a political appointee who serves as an agency head and isn't focused on IT issues. Budget and personnel policies, including pay rates that are lower than those in private industry, can also con-





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# Railroads Hot for Satellite Monitoring

But analysts, customers question need for a system that could cost millions of dollars

SX Transportation
Inc. has equipped
300 locomotives
with a Global Positioning System

(GPS) and will have 2,800 more naline by October. Union Pacific Railroad (UP) in Omaba is experimenting with satellite-based monitoring systems, too. It installed devices on 100 of its 155,308 freight cars last summer.

"The future of feat trackingli in the rail industry is GFS, sald Dave Wheeler, a systems vice president at Union Pacific. But others in the railroad industry beg to differ. They say GFS is unnecessary and a waste of money because the industry already uses the land-based Automatic Equipment identification (AED system to monitor the whereabouts of experience AED and the same and th

## Military vs. Civilian 6PS

GPS as a satellite-based radio navigation system developed by the U.S. Department of Defense. GPS allows users to determine their location threedimensionally 24 hours a day in all weather, anywhere in the

Currently, GPS provides two levels of service - a Standard Positioning Service (SPS) for general civilian use and an encoded Precise Positioning Service (PPS) primarily intended for use by the Department of Tutioning.

The SPS signal len't as accuste as the PPS signal, which is acceptabled to prevent enemies from targeting it. While PPS prepoints the location of an object to within 3 feet. SPS can only pingone an object to within 151 water.

- Linda Rosences

motives have tags that send information to the railroads as the tags pass AEI readers, which are usually placed at major intersections. Many vendors offer GPS sys-

Many wendors offer GPS systems. Jacksonville. Fla-based CSX uses the Pinpoint Locomotive Tracking System from GE Harris Railway Electronics LLC in Melbourne.

Fla.

Pinpoint consists
of an onboard computer, satellite
transceiver, locomotive interface

MICHAEL EREMRERS

transceiver, loco- CSX plane of the motive interface its use of the electronics and a power system in the cab. To support this system, an antenna is installed on the roof of the locomotive. Location and final developments of the company of the system of

fuel data transmitted by the locomotives is reformatted at the GE Harris data center and delivered to CSX's data center. Pinpoint allows the railroad to know the location — within approximately 110 yards — of a

locomotive, according to Orbcomm Global LP in Dulles, Va. the satellite communications provider for the system.

### Finding Wayward Trains Michael Erenberg, assistant

vice president of locomotive operations at CSs. said the system — which is programmed to send alerts to locomotive managers hourly—also quickly identifies locomotives that have left their rootes. Union Pacific uses a system called Health Track from Star-Tack LLC in Morris Plains, NJ. Monitoring sensors are placed on some freight cars — two-thirds of which carry automated.

Trak LLC in Morris Päins, N.I. Monitoring sensors are placed on some freight cars — two-thirds of which carry automobiles — to detect potentially damaging events such as theff or break-ins. The system sends the information via satellite to the railroad operating managers, private car owner or shipper. The satellite link provides interactive communication, allowing the owner or operation.

of a railcar to ask about location, load status and performance via the Internet or UP's internal systems. But critics abound.

But critics abound.
Paul Neville, vice president
of Railinc Corp. in Cary, N.C.,
said GFS technology is redundant and isn't worth the expense because of AEL Railine
provides an electronic data interchange network and world-

nge network and worldwide database for the rail industry. "While GPS is a good idea, the railroads would have to equip all their cars with transmit-

ters, at about \$1,200 a car." Neville said.

sepand lion railcars, it would cost hundreds of millions of dollars. The railroads would have to be presented with a strong business plan if they have to be cominged to archive

[are to be convinced to replace the AEI] system that is only 10 years old."

Donald Broughton, a transportation analyst at A. G. Edwards & Sons Inc. in St. Louis, said GPS is good technology in

theory, but it doesn't live up to its potential in practice.

"It's not financially visible for the railroads to do this." Broughton said. "First, they're already accomplishing what they want to accomplish the using AEI technology! And second, the GFS technology available to civilians can't accurately pinpoint the location of It railcar or locomotive!."

of Ia railcar or locomotive)."
Civilian GPS, which uses a different signal than than military
GPS. is accurate to within 10
yards. It's expected to be accurate to within 3 feet by 2003
(see related stories, this page).
Railroad customers have
mixed opinions about the use
of GPS to track trains.

Scott McCalla, supervisor of rail fleet operations at Omya Inc. a calcium carbonate producer and shipper in Proctor. Vt. said it would be a mistake and expensive to install GPS technology on railears. "The railroads already have

a system in place that is under-

utilized," McCalla said, referring to AEL "The problem is there are only so many readers out there, and short-line railroads, like our local railroad, don't use [the system]. And not even large railroads use [AEI technology] as much as they

should."

But Chris Fernander, logistics manager at Charlotte N.C.-based KoSa Chemical said installing GPS technology throughout the rail industry is

said installing GPS technology throughout the rail industry is a "matter of priority." "Everyone is trying to track where their product is at any given time," be said.

### Keeping an Eye on the Goods From the customer's per-

spective, GPS is cost-effective because it less them know where their goods are, Fernandee said. However, he added, it's better for the technology to be on cars rather than locomotives, because cars get separaed from locomotives. Erenberg disagreed, saying that if a company knows where

the locomotive ls, it knows the location of each car.

Erenberg said CSX is using a combination of GPS and AEI tags and readers to monitor its

fleet, but plans to expand its use of GPS in the future. Other railroads — including Burlington Northern Santa Fe Corp. in Fort Worth, Texas, Norfolk Southern Corp. in Norfolk, Va., and the Canadian National Railway Co. in Mon-

## Will GPS Technology Help Railroads?

Pres: Proposits location of locomol

ide time, time spent off course and the time it takes to get into and out of terminals.

Provides real-time data on load status, operating performance, fuel level

CORE:

Wife supernave - approximately
\$1,200 per railcar

Militago railcads already use a
land-based teaching system

© Current technology can't circolor

treal — are working with the Federal Railroad Administration to implement a system that would more effectively control train systems to prevent accidents, as well as reduce delays and increase running time reliability. That system uses several technologies, including GPS and fiber optics. Svill, some say GPS will eventually become the stam-

dard, even if its usage is somewhat sporadic now.
"Down the road, GPS will probably replace AEI technology, even though it's quite a capital investment," said UP's

# **GPS Accuracy May Improve**

\$33M more needed to fix inaccuracies

In the not-too-distant future, civilian users of Global Positioning System (GPS) technology, such as milroad operators, will be able to pinpoint the locations of their equipment much more accurately, according to John M. Samuels, vice president of operations, planning and budget at Norfolk Southern Corp. in Norfolk, Va. Last year, as part of the effort to make the existent more re-

Southern Corp. in Norfolk, Va. Last year, as part of the effort to make the system more responsive to the needs of civilian users worldwide. Vice President Al Gore announced a \$400 million initiative to

modernize GPS by adding a second signal in 2003 to be used by civilians for applications that aren't critical to public safety, including the track-

ing of railcars and locomotives. Samuels said the railroads are asking Congress to appropriate \$33 million to install a natioewise differential GPS which would correct the inaccuracies in the satellite-based system and allow for a location reading to within 3 feet — for the transportation industry.

"Nationwide differential GPS gives the railroads what they need: a more accurate tracking system." he said. "And the railroads are preparing for using [differential GPS] by looking at how to integrate it into their systems." 9

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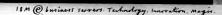
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# **NEWS**INDUSTRY

# L&H to Buy Dragon

h H.Y. (L&H) has agreed to sire rival Dragon S L&H, which splits its headquarte rees loper, Balgium, and Burl-on, Mans., said it become to imdiately gain access to new mar-s from the extra languages that a supports. The cor cts to Inverage Newton, Mar nd Dragon's resources in tele-ny, medical, legal and health applications to expand its

## fortel Forms Unit for Business-to-Business

ced the establishment of a es to business services unit and an alliance with Anderson Con g in Chicago to help develop and sell some of the new unit's ets, Brampton, Ontario-bas rtal retooled two recent acquir tions, San Jose-based Clarify inc. and Bohamia, K.Y.-based Periphon ice Corn. to form the new unit

## Cisco to Purchase SightPath for \$800M

will purchase SightPath Inc., a prier of internet appliances, is an stock deal valued at about \$800 on. Close is interested in Sight ath's content delivery appliances which will help Cisco's customers iver live streaming media, highability heeting and other capabilaccording to a statement from

## Xernx Denies Cuts

Xerox Corp. In Stanford, Conn., denied published reports that it will cut 3,000 to 5,000 jobs from its force of 94,600 employees. men last week ed to comment an possible ob cuts or a restructuring charge. But the company said in Jenuary that it expected "a substantial up charge" for the first

# Making Novell an Internet Company

CEO Eric Schmidt discusses new strategy. Linux and the viability of NetWare

Salt Lake City last week, Novell Inc. Chairman and CEO Eric Schmidt outlined his "one Net" vision of eliminating the boundaries between intranets and the Internet using Novell Directory Services (NDS) eDirectory to control e-commerce relationships with customers and busi-

ness partners. Novell introduced an architecture called Directoryenabled Net Infrastructure Model (DENIM) for delivering this vision, DENIM pieces together offerings from Novell and its partners into a platform for delivering Internet-based. modular and cross-platform services. Schmidt discussed the company's strategy with Computerworld reporter Do-

minique Deckmyn. Q: DENIM sounds like Next Geoer-ation Windows Services, the inter-net-based services Microsoft for NDS and DENIM. This has been Corp. has started to discuss. How would you contrast the two? A: Microsoft is very good at

my previous job (as chief technology officer at Sun Microsystems Inc.) and here, I have been talking about a world where you have services that are made available over the Internet and that are con- [avaBeans will be successful. sumed by mul-

tiple clients using HTML and YMI That's a key part of what Pill Gates has been talking about. And my answer "Welcome the club." The differ ence is that

they have a HOWELL'S SCH Win dows-centric think is correct.

going to have an easier time with DENM?

will use this platform using XML or JavaBeans [to access Novell services! The creation of interfaces of that type is no a core competency of Novell - witness the lack off success of NLM [NetWare Loadsbie Module | interfaces as a general interface. So my guess is we'll do very well because XML and

view, and that's a view I don't | Q: Many vendors, including So

The Santa Cruz Operation Inc. and IBM, are endorsing Linux or the of its directory, but ion't the ore of an opportunity for Novell? dard model for working with Linux phenomenon.

There's not a standard set of terms, there's not a standard contract, and in almost all cases, the models are unproven. So what we decided to do was take NDS and put it on top of Linux and then get the common management and interop erability that is Novell's strength to apply to Linux as well. So my view is: Let's get that out, see what customers say and then iterate from there.

Q: Have you considered an open-course future for NOS or NetWare?

A: Sure, we've talked about that. But again, I think the models are unproven. And you are using [the term] open source without definition. Every one of the companies that you named uses it in a different way. We have thought about (giving NDS away for free), and we have done bundles and promotions. It's still under discussion

Q: The NetWare business has stabilized, but it's lesing market share, is it not?

A: The NetWare business is growing. You have to be careful what you compare. We use the number of between 10% and 20% [revenue] growth per year. Unit growth should be low, because one of the benefits of NetWare is you can reduce the number of servers. In general, Novell's market share has declined very slowly as measured in units. I'm not going to be worried about that as long as it is server consolidation rather than throwing NetWare out 9

# copying others. Since 1994, in A: We think so, and I'll tell you Internet Data Centers Offer More Uptime to Customers

Provider guarantees 99.999% reliability

With on son week from a Silicon Valley service provider, the Internet data center model now stands toeto-toe on reliability with traditional S/390 glass houses, but without the distance limitations of IBM's Sysplex technology. Conxion Corp. in Santa Clara, Calif., wowed analysts with a service level agreement (SLA) offering a 99,999% uptime guarantee. If a Solaris or Windows NT server goes offline for 26 seconds, service for the month is free.

Joanna Makris, an analyst at The Yankee Group in Boston, said Conxion's SLA surpasses others that she's seen, and it underscores the advantage of a service provider that owns its own network backbone.

But analyst Warren Wilson st Summit Strategies Inc. in with its plan to offer in May | Boston said Conxion's offer.

while better than those of most of its competitors, is part of a trend. Data Return Corp. in Irving, Texas, offers 99.995% availability on its Windows NT-only data center. And startup Intira Corp. in Pleasanton. Calif., has a guarantee of 99.95% availability, regardless

of application. Microspc.com, a division of Micron Electronics Inc. in Nampa, Idaho, will offer a "five nines" SLA with its HostPro service if the application is built with a specific tool set and verified by Micronpc.com. However, Conxion's "proactive" SLA includes better man-

agement tools and financial considerations, Makris said.

critical applications but can't invest in redundant infrastructure will be interested in these SLAs, said Courtney Munroe, an analyst at International Data Corp. in Framingham, Mass. In a related development IBM and Qwest Comma tions International Inc. have agreed to build and manage 28 North American data centers

over the next three years. Despite this deal and exes sion of data centers by Conxion and others, there appears to be little concern about a glut of data center care

"If you look at the projected petabyte storage growth needs, we're barely ahead of the curve," said Joe Butt, an analyst at Forrester Research Inc. in MARYFRAN IOHNSON

# The no-spoof crusade

N A SHOW OF INSTRUCTIVE MISCHIEF, a reader not too long ago sent me e-mail that arrived from myself. I'd been spoofed. This fellow (clearly a man with time on his hands and a mission in his heart) intended me no harm. But he wanted to show me how pitifully easy it was to slip into my e-mail system and borrow my online identity.

When the wave of distributed denial-of-service attacks disabled several prominent Web sites last month. I didn't even connect my minor spoofing incident with that widespread, costly havoc. But it was that ability to spoof - to delibcrately craft false return addresses - that helped those (still unidentified) crackers hide hundreds of Internet-connected desktops they had turned into unwitting attack

does. This is the dark side of anonymity on the Net: the ability to skulk around, implant malicious code, then mask the damaged sites with spoofing.

The Internet community has long had the power to stop spoofing, right in its nasty, trackless path. How? Through the relatively simple defensive maneuver of network router filtering. If crackers can't spoof, they can't run and hide. The catch? It'll take a virtual village of businesses, universities and government agencies to use such filtering to make it widely effective.

Last week, the SANS Institute issued an urgeot call to action to the Internet community. It posted a free set of guidelines at www. sons ore/dossten/index htm that can be used to halt infected IP packets on their way through router gateways. The guidelines were drafted by UUoet and tested extensively by more than 100 member organizations, including

Cisco. Mitre Corp. and the major Internet service providers. This week. Mitre plans to release a free software tool that any of us can use to verify that our Net access provider is using router filtering and protecting us from spoofing. The once-cloistered world of Internet citi-

zens is where we all live now, and most of us want to feel safe in our communities, among oeighbors we can trust. SANS's antispoofing crusade is a very timely cause and a great opportunity for the IT community to lead. So seize the moment. Oh, and be suspicious of any e-mail from me.



# Digital markets have arrived, so strap vourself in!

VE BEEN RACKING MY BRAIN trying to find a word or phrase to describe what the new digital marketplaces will do to information technology departments. I keep coming up with movie titles about asteroids about to hit Earth, Armageddon, Deep Impact, Take your pick

By now you know that business-tobusiness e-commerce will dwarf business-to-consumer e-commerce and that trillions of dollars worth of transactions will flow

over the Net in a few years. If that were just the use of the Internet to supplant electronic data interchange, proprietary oetworks or automated fax/phone/Rolodex systems, that wouldn't be a big deal for IT depart-

ments. Just another Web based application. **But International Data** Corp. (IDC) has just pub lished its forecast of B-to-B

e-commerce, and there's plenty of news for IT. Consider the three types of B-to-B e-commerce. The first, in markets where there are lots of customers and a few dominant suppliers, could be called "extranet-based," or selling through the Web site. The second, where a few buyers dominate - such as Ford, GM and DaimlerChrysler in auto parts - could be called "procurementbased." The big buyers dictate how they want

their suppliers to tie into their electronic procurement systems That's really about all there is for B-to-Be-commerce today. But enter the third type, the thou sands of digital exchanges - what IDC calls "digital marketplaces" - that started popping up last year. Did you know there are a dozen such exchanges for wholesaling fish? These favor neither the supplier nor the buyer. But by 2004, they will account for more than 50% of B-to-B e-come Here's a clue to the immenseness of this change in commerce habits. One of the most well-known start-ups that specializes in setting up these exchanges is VerticalNet Inc., which lost \$32 million last year on reveoue of \$24 million. Yet its market capitalization is \$8 billion, and Microsoft just committed \$100 million to the company. Birds are flying backward here.

Did you think implementing a commerce Web site was tough? Well, what happens when you





# NEWSOPINION

have to serve up your whole inventory to dozens or hundreds of such exchanges? Or let people track their orders or settle payments? It will be like running the back-office settlements for a bro-

Meanwhile, your colleagues in marketing, sales, production and finance will be going nuts trying to keep the company alive as business models change at the speed of light. Do you think you'll he ime

That's the real problem. Earth-shattering change is implied here, but no one can really predict what's going to happen, just that it will. We're too close to the asteroid to see it well, and it's closing in. You're just going to need the skills,

courage and charisma of Bruce Willis to survive. And you thought migrating to Windows 2000 was a beadache.

ALEX TORRALBAS

## How the Net endangers a basic American liberty

RECENT DECISION in California on free speech (or on sending A porn to a minor, if you prefer that description of the case) raised an issue that's far more interesting than the particulars of the case. The courts said that the laws were too vague and that prohibiting someone from sending an e-mail containing a "pornographic" image, regardless of who the recipient was - in this case, a cop posing as a minor - vio-

lated the sender's First and 14th Amendment rights.

J. Robert Flores, senior counsel for the National Law Center for Children and Families, objected to the decision, saying, "The companies that run the Net have already won the battle that the Net is not a free place. It belongs to the people who own the hardware and software over which you communicate."

[Emphasis mine.] This is really an interesting point. And a disturbing one

Although it is, in fact, absolutely the case today. to say that the access points to the Net - such as America Online, your Internet service provider or your company - are private entities that are entitled to censor you or set anti-free-speech rules, regardless of their constitutionality, is shocking. And it covers everyone in America.

That struck me as being the equivalent of, say, Bell Atlantic or GTE setting rules on what I can say on the phone. But any Internet service provider can say, "Anyone using foul language or transmitting 'lewd' material will be booted [read: censored]," in effect giving corporations a choke

hold on the First Amendment Could I put up my own server and say whatever I darn well please? Yes, but I would still need to connect it to the Internet, and my bandwidth provider would almost certainly reserve the right

to pull the plug on me if it objected to my site even if it's legally protected speech. The Internet has become something of a legal

twilight zone, with the courts being asked to decide, in effect, "Does the Constitution apply to the Internet?" That the debate even exists is pretty scary. Too many judges, attorneys and legislators have a woefully deficient knowledge of technology and tend to view the Net as some alien thing to be handled with rubber gloves.

Some cases presented to the court are fairly clear-cut (like the Communications Decency Act), and judges have, thankfully, blown them out of the water. But what's scary is the idea that all Internet access, and therefore all Internet speech, can be owned by private entities that can make up their own ruler

Flores' quote by itself can serve as a call to action for those of us who want to keep the Internet a free and lively place to ask our leaders to pass laws protecting our rights from arbitrary cornorate censorship.

It is indeed true that your Internet service provider, AOL and others are private entities and entitled to set their own rules. But the Internet doesn't belong to them. All they provide is the link. When service providers have been sued for the content on their servers, they have rightly --and successfully - argued that they're just a conduit and not responsible for the content their subscribers create or trade. Very honorable? More like self-serving, albeit serving the greater good.

What we should ask for is a law that says, "If it's legal, you can't censor it." All Internet service and other providers would have to strike any "terms of service" that violated this law. The Constitution's free speech protection doesn't stop at your service provider's doorstep. Then, the Ner would indeed remain free and it would be established that it belongs to everyone.

Y2k worth the worry \* EOFFREY JAMES I premise that Inethics Cindy Romines Longview, Treas wasn't addressed years ago because everyone was foolishly focusio

on the so-called Y2k bug ["Y2k Waste Left IT Unprepared for a Real Problem," News Opinthe \$19.9 billion spent ion, Feb. 28] is the most worldwide on continshallow, illogical and laughable theory I've productively allocated

read of late Granted, there was a lot of Y2k hype. However, the consequence of not addressing the problem could have been devastating. According to James, contingenc money. I bet each organization that went through that planning process improved its ability to respond to

James misses the point entirely. While IT professionals are con ing business, backers sit around all day and think up ways to disrupt that had we left Y2k to itself business. A few Web many important comput sites suffer denial-of-ser er systems would have vice attacks and James

disasters

concludes my entire pr James needs to realize fession is gullible, gutthat although the Interless and totally without net is everyone's hot topic. it's not vital to the life of the average person.

all of us can

If the IT community

hype and hoax, why did

CEOs and CIOs consent

did? Even if IT managers

believed that Y2k would

prove to be a nonevent,

being caught with his

Business systems analy

S A progra

I can tell Geof-

frey James that

pants down. Christine Hands

J. P. Morgan & Co.

New York

No one is going to die if James' Internet access is NDOUBTEDLY interrupted by a few hackers. But lives really think of an infido rely on other evszems nite number of ways that that really would have been affected by Y2k.
Jim Wieski gency planning for Y2k could have been more Aurora, Colo. Jimfrenski con

New Kids' not unique

believed that Y2k was all READ WITH GREAT interest your article to spend as much as they "Keeping the New Kids" [Business, Feb. 21]. You say they're smart savvy, ambitious, caper no one wanted to chance and determined to have a

I've got news for you: so am I. I may not be a "new kid," but I subscribe to all the same goals these young people have. Didn't we all have the same hopes and dreams when we started

Hans Dekkers

worker who isn't thing, I think the needs and goals expressed by my younger counterparts in IT speak for all IT workers, not just younger ones. I too am looking for a place to grow, feel challenged, learn and stay long term. Maybe if com

S A NEW IT

panies embraced some of the notions expressed in the article, we could shed the two most offensi stereotypes associated with IT, specifically that younger IT workers don't have any commitment and that older IT workers can't learn any

VIERWORLD well ants from its read Letters shouldn't exceed 200 words and should be adto Jame Eckle, letters editor Computerworld, PO Box 9171 500 Old Connecticut Path. Francingham, Mass. 01701. Fax: (508) 879-4843, Inten constanted com

BILL LABERIS

### IT may ache when the e-party is over

TOTWITHSTANDING the difficulties in engineering e-commerce applications, the track to building them has been one cushy ride on the gravy train. Basically, the classical test of worthiness of IT investments - accountability - has often been only leniently

applied to e-commerce projects. Fasten your seatbelts, because the ride is about to get a whole Int bumpier. There are many indi-

cations that investors and company executives

are going to demand much more accountability (as in profits) from their prodigious e-commerce investments. For IT, this could spell a whole new round of headaches and demands. Data presented at the recent International Data Corp. (IDC) Directions 2000 conference revealed that executives expect your e-commerce sites to make money, and soon. Imagine that! IDC sam-

pled opinions of executives who own the budget for online business at more than 600 companies. Sixty percent of them said they expect their firms' online businesses to be profitable by the end of next year. I found that amazing because hardly any make money today. Such expectations are sure to put increasing pressure on IT to help

deliver profits. Also, investors that had outrageously bid up the value of dot-com businesses are beginning to smarten up. Prominent Wall Street analysts, who control the ebb and flow of so much investment money, now say that upward of 75% of Internet companies will never make money. Many of the same analysts who belped drive the absurd values nf many Internet companies now lament that they're overvalued. This could translate into agier budgets for e-commerce infrastructure

or far greater accountability for such outlays. Finally, the poor showing of many business-toper Internet companies in fulfilling orders during the holiday season reinforced the idea that many dot-com wonders are just flashes in the pan. There is a growing belief that in business-to-consumer e-commerce, what will emerge is a small number of giant conglomerates like Amazon or eBay, with everyone else either striking partner-

ships with the giants or simply disappearing. These are quite different and sobering version of e-commerce reality than you've been accustomed to reading and hearing. For example, conrentional wisdom formerly held that Internet ology would spawn countless competitors in one of the truest expressions of free-market

capitalism. If the aforementioned oligarchy model provails what effect would that have on your e-commerce system development strategies? If your company's role ultimately is more of a subordinate to giant "anchor" sites or portals like Yahoo or Amazon, should you be building the infrastructure any differently than if your compa-

ny operated more independently? I believe that, at a minimum, IT managers responsible for the build-out of the e-commerce infrastructure will need to focus as much as ever on basics, including building their sites not in isolation, but tightly integrated with existing back-office systems. Tight integration is the only way you can hope to gain the accountability that will be demanded going forward. Only 22% of the IDC panel viewed their online businesses as independent of internal, integrated systems The bottom line is the bottom line, which for a variety of reasons now is likely to reinsert itself

as a key IT performance benchmark for e-commerce systems development.

#### MICHAEL CUSUMANO The secrets of software success

NTREPRENEURS and managers who want to create a software company or expand their operations and sales overseas need to understand what they're facing in different countries.

I'm often asked why so many U.S. companies are world-class players in the software market. Yes, there are excellent software producers overseas. Hitachi, Fujitsu and NEC usually rank

among the top 10 in revenue. Europe has SAP. **Business Objects and Baan** Israel has many small software companies. India has a vibrant programming services industry. But only the U.S. has produced scores of companies that create standardized, pack-

aged software for global mass markets. Why? The answer lies in understanding the supply side - the infrastructure and intellectual capital needed to create global software companies - and the de-

mand side - local and historical factors that have shaped customer preferences and scale economies. A supply-side view reveals very different kinds of markets. In some countries, university education in computer science and the number of software developers and entrepreneurs are very good, like in the U.S., Israel and India. In others, education is strong and programmer availability ample. But entrepreneur support mechanist

such as a vibrant venture-capital industry, are

weak in places like China and many European countries. In a third type of market, both education and entrepreneur support are weak, as in Japan - which is changing, but slowly.

The first type is the best base for creating global software companies or expanding a company's

operations overseas. A look at the demand side reveals other market characteristics. One type is global, which demands standardized software products in both "borizontal" segments, such as for basic operating systems or database products, and "vertical" segments, such as for industry-specific computer-aided design software. A second type needs standardized software, but only for local vertical or horizontal markets - for example, Japanese or Chinese word processing (useful only in Japan or China) or tax preparation software useful only in a perticular country. A third type looks for customized products like online banking or factory automation systems.

Nnt surprisingly, U.S. companies have benefited from favorable supply and demand factors. Government has played a big role; lots of defense spending drove university research and the com puter hardware and software industries during the 1950s, '60s and '70s. But to become a global software company, you must write the equivalent of a best-seller or establish a monopoly that's the bridge everyone needs to cross. This kind of mar ket requires scale economies and the ability to set global standards. Microsoft has mastered this like no other company. But, as we see in Europe and Asia, the other two types of markets are easier to play in. They require mastery of only one local market or application domain or a close relationship with only a few customers.

Supply and demand factors have also contributed to different environments for entrepreneurship. In Europe, software has traditionally been more of a science. There is excellent educatinn in computer science and mathematics, and a few local entrepreneurs and computer scientists have exploited concepts such as formal methods and object-oriented designs. But programming "elegance" often dominates, and few companies have understood global customer needs well enough to create standardized products that dominate international markets

In contrast, many Japanese programmers ha treated software development more like a production problem. The domestic market is large second only to the U.S. - but customers usually want tailored products. In response, con have emphasized customization and the precision engineering of basic applications. So we have software "factories" and production dominated by companies that are mainly hardware producers and systems engineering firms

U.S. programmers and entrepreneurs are probably unique. Whether the company is Microsoft. Oracle, Novell or Intuit, software is a business to a U.S. firm, not an art or science. Understand this distinction is the first requirement for build ing a world-class software company. But understanding the structure of supply and demand in specific foreign markets is equally important for U.S. firms to take their business overseas.



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# BUSINESS

#### AT YOUR SERVICE

Already recognized for its focus on service. FedEx turns to Beta-Sphere's customer relationship management services to sharpen the quality of its Web site and better respond to clients' needs. • 36

and decency behind" are indicative of a moral decline in IT, says Paul A. Strassmann. He says it's time for industry leaders to clean up their acts before the government does it for them. > 40

# JUMPING SHIP

Have your workers been speaking in hushed tones lately? Coming to work impeccably dressed? Or surprisingly silent about future projects? Sounds like they're getting ready to jump ship. Here's how to spot the signs, p 42

# KEEP ON TRUCKIN

are rushing to the Web. where new sites and exchanges can belo them match loads with truckers, coordinate logistics and cut costs. . 36

#### STAR CATCHERS ASP MODERATION

Application service providers aren't always the best bet for large, established companies. says Kevin Fogarty. But they make perfect sense for businesses branching into new areas such as e-commerce. • 38

Your employees may excel at their jobs, but that

doesn't mean they're happy, James Waldroon. co-author of a Harvard Rusiness Review article titled 'Job Sculpting: The Art of Retaining Your Best People," offers tins on bow to hang on to your star employees, p 44

## INDIAN INFI ITX

Half of all H-IB visas are issued to people from India. And the number of Indian-led start-ups is booming, thanks to sophisticated networks and support within the hightech community. • 38

# JUST IN TIME

How do you stay ahead of the curve when new information is being churned out faster than you can say "professional development"? Today's workers are turning to technology's new just-in-time learning

# LIFE AT THE TRIB

Wonder what it's like to work for the IT department of the company that publishes the Chicago Tribune and owns part of the Cubs? Kathy Ameche, CIO at Tribune Co., gives us the lowdown . 40

# FTHICS OVERHAU

that offer advice such as "how to leave kindness

DRIVING SOME HARD BARGAINS

tools. > 50

If you aren't careful during negotiations with contractors, you could wind up giving away the farm, warns loe Auer. Creating a "zone of consideration" can belo ensure that you stay in charge, 158



JOB SEEKERS TAKE HEED: It's your market. The demand for jobs is booming, say analysts, and this quarter all eves seem to be on e-commerce. Those with the right skills and experience are certainly in the driver's seat. So what are the best jobs out there? How much do they pay? And what does it take

to land them? See the results of Computerworld's quarterly National Survey of

IT Leaders for some answers.



# BetaSphere Delivers FedEx Some Customer Feedback

Courier hires firm to appraise customers' online experiences, suggest improvements

INCE LAUNCHING Its Web site in 1994 to make it easier for consumers and businesses to access its services, Federal Express Corp. hasn't slowed down its push to customer satisfaction. In fact, FedFy sups it's se nitted to giving its cus-

tomers the best possible service, it has hired BetaSphere Inc., a Palo Alto, Calif-based provider of Web-based customer-feedback software and services, to implement customer feedback programs to

"Our studies show that cus tomer satisfaction improves when we are able to incorporate their feedback before we [launch new services]" said David Roussain, vice president of e-commerce marketing at the Memphis-based shipping

evaluate the FedEx Web site.

cruiting FedEx customers from around the world to evaluate FedEx's Web site for case of use and navigation, explained Phil Davis, vice president of sales and marketing at Beta-Sphere, which began working

with the shipping company about a year ago. The bottom line, he said, is to gather customer feedback that will help FedEx make

prove customer satisfaction. During BetaSphere's customer feedback study, evaluators are asked about the accessibility and content of the in-

formation on the Web site They are also questioned about the quality of the presentation and ease of posigation explained Claire Ruddy, manager at FedEx.com. One U.S. customer pointed

out that most people visit the daily basis site to track their packages and suggested that FedEx put the package-tracking window right

changes to its Web site to im- 1 on the home page

"And we did that," said Ruddy. FedFx also took the advice of another U.S. customer and developed an online application that lets customers order

"We learn what the customer wants," said Ruddy. "We want them to drive our products. In addition to the testing done by BetaSphere, we talk to our customers online on a

EndEx's attention to its our tomers' needs is paying off. The number of customers who used the Web site to ship packages has tripled since February 1999, according to company spokeswoman Sally Daveo port. And in the same time, the amount of people who used the site's package tracking function grew by 202%. FedEx has done a great job

at not only producing a firstrate site, but of implementing ideas put forth by beta testers, said Simon Lidbetter, a former employee at U.K.-based Montal Computer Service Ltd., a Fed-Ex customer and recent Beta-Sphere program participant.

## Keeping Up With the Competition FedEx isn't the only shipping

company committed to improving its customers' experiences Arch rivel United Daniel Convice of America Inc. in Atlanta also understands the value of keeping its customers happy.

UPS spokeswoman Susan Rosenberg said the company conducts ongoing market research on the customer experience, including telephone surveys and focus groups, to gather their feedback Customers can also leave suggestions at the UPS Web site, she said. John Fontanella, an analyst

at AMR Research Inc. in Boston, said it's important for shipping companies to keep their customers happy. \*[UPS and FedEx) are keeping up with the current state of the in dustry," he said.



# Still a World Wild Web in Trucking Industry

Sites aim to increase efficiency, trim costs

E-commerce action in the \$450

billion U.S. trucking industry is already giving off sparks, and it's heating up even more with Web sites for load brokers, shippers and providers of

Tve counted something like 55 trucking industry servicerelated sites," said John Fontanella, an analyst at AMR Research Inc. in Boston

The trucking industry has been behind some others in Internet use, said Bruce Martin. editor at trucking Web portal Lavover.com Inc. in Akron. Pa. But the moress of existing

ingly common use of wireless networking will cause "com munications in the industry to change more in the next three months than it has in the past three years," he predicted. Last week, General Mills Inc.

Land O'Lakes Inc., The Pillsbury Co., Graphic Packaging Corp. and Fort James Corp. announced plans for a Web-based freight and logistics exchange. By combining shipments, they can "ship in truckload quanti ties, not fless-than-truckload!

quantities," Fontanella said. Three weeks are, six of the largest U.S. carriers - Covenant Transport Inc., J. B. Hunt Transport Services Inc., M. S. Carriers Inc., Swift Transporta tion Co. U.S. Xneess Enterprises Inc. and Werner Enter-

they will merge their logistics units into the site www. transplace.com. The Web site will match loads with open spots on carriers' trucks and save the companies money by combining the group's purchasing power.

Layover.com added online mapping to its Web portal last mooth. In addition to free e-mail, trucking news, chat rooms and links to related sites, it offers online databases of loads and routes available through several brokers, via www.truckstop.com, for a \$25

monthly fee. The concept isn't new, Fontanella said. "There are a lot of load-matching bulletin board services," mostly dedicated to norticular markets.

ompanies in the U.S. have fewer than 99 trucks," said Donald Broughton, an analyst at A. G. Edwards & Sona in St. Louis. Load-matchine sites helo those companies manage logistics and avoid deadheading - returning from a delivery with an empty truck - since

shippers pay only for "loaded"

"Sixty percent of trucking Shippers and carriers us most sites for free, though shippers often advertise for hide online and then receive bids and award jobs off-line, Fontanella said.

Real-time transactions are coming to Truckston.com and other similar sites within the next three months, Martin said. and full-fledged auction sites should appear by year's end. 9

## Trucking Sites Proliferate

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#### KEVIN FOGARTY/BRICKS AND CLICKS

They've been doing that

But why would a large.

established company want

cation, such as the borren-

dough compley business.

critical ERP applications

that are most often cited as

hand it off to someone else?

Most organizations take

good ASP candidates, and

to take a functioning appli-

since long before ASP

became a buzzword

# Making the right bet on ASPs

NTIL I TALKED to Scott Manville, I never really got the whole application service provider thing, at least for big companies.

for big companies.

Manville is a senior vice president at U.S. Trust in New York. He's a smart, experienced IT guy. He thinks
ASPs are a sood idea – but source iobs like pavroll.

not for the reasons I'd always heard. The basic ASP concept is tn nutsource a whole application. You pay a subscription fee, and the ASP hosts the application, runs it, maintains it and up-

grades it as necessary.

This makes sense for start-ups that have no existing applications and have control spending. It even makes sense for small com-

years and millions of dollars to bring an ERP system online. It becomes the engine of the business. I assumed outsourcing something that trucial was a Bad Idea.

crucial was a Bad Idea.
So did Marwille and the
other high-level IT managers who were in a Technology Manager's Forum
session I moderated in New

York a couple of weeks ago.
They said service levels — which are hard enough to define and support within the firewall — are a complete erapshoot once you start piping traffic outside. Security, staffing, reliability and understanding the business processes behind the applications are also lacking.

at most start-up ASPs.

But Manville and the others still like the idea of ASPs if they add new capabilities — like conducting business-

to-business auctions, offering online billing, managing Internet recruitment advertising nr sifting through electronic résumés for good candidates.

good candidates.
Trusting those
e-commerce and
recruiting functions to a service
provider can give
you a real advan-

tage — and it doesn't put your core applications at risk. Signing up with the right collection of ASPs can give you drop-in e-commerce capabilities at a low cost and even lower risk. With the right contracts,

an ASP setup is flexible enough that you can experiment a bit, changing the service providers

you use and the functions you provide to get the best mix for your customers. Once you have some experience, it makes sense to tions incide.

tions inside especially as e-commerce becomes a more important part of your business.

And with your e-commerce capabilities firmly inside your organization again, you can look for a new set of functions you want to try with a new set of ASPs. •





Here's to a faster Web site: the Compan TaskSmart C. Series server

# BUSINESS

# Indian Entrepreneurs Take Charge

Indian-led start-ups explode in number

BY JULEWIA DASS Almost half of all H-IB visas were granted to Indian nationals last year, according to the ration and Naturalization Service. China ranked sec-

ond, grabbing just 9% of the But increasingly, Indians are doing the hiring themselves. Thanks in large part to mentoring and organized network-

ing efforts, more Indians are heading technology companies of their own In fact, this phenomenon has apted the magazine Silicon India to create the Si Tech Index, which tracks the performance of 20 firms founded in the U.S. and India. The stock index jumped more than 200% last year. That's compared with 19.5% for the Standard & Poor's 500 index and 102% for the Nasdag 100. Most Indian-led technology

companies are no more than 3 or 4 years old, according to Christine Comaford, man director at venture capital firm Artemis Ventures in Sausalito. Calif. "Before that, it was a rarity" to see Indians at the helm of start-ups, she said.

**Better Networking** One major reason for the

change has been more organized networking among Indiant, said Comaford The IndUS Entreu (TIE) has emerged as the preeminent networking group for

TIE bosts monthly Angel Forums, in which budding entrepreneurs pitch their business plans in hopes of receiving angel investing or mentoring from charter members. Last year, 37 venture capital firms were TIE sponsors,

said the group's executive director, Bakul Joshi, He said he hopes to attract 60 this year. Sunil Wadt

CEO of iGate Capital Corp., an IT services holding firm in Oakdale, Pa., estimated that he has

provided between \$250,000 and \$500,000 in angel funding to Internet companies founded by Indians during the past year. But an entirely different sce- few [Indians] had been entre-

nario existed 10 years ago, said

"This network was pretty weak "he said In fact, Wadhwani launched his company without any ven-

ture capital funding. The first time it got outside help was three years ago, when Wadhwani took the firm public. Even just five years ago, the outlook was bleak. In 1995. K. B. Chandrasek-

har, chairman of Santa 'Clara, Califbased Exodus Communications Inc. said he "knocked on the doors of every venture capi-

tal firm," but the

view was that Indi-

ans, while skilled

technically, didn't s the managerial talent to lead new companies. "The credibility of India was not hish (at the time) because preneurs," said Chandrasekhar, who is also CEO of Sunnyvale. Calif.-based application service provider portal Jamcracker Inc. In fact, Chandrasekhar's firm

was on the verge of bankruptcy when TIE members helped him with an initial \$700,000 in

Srini Anumolu co-foun Sunnyvale-based elance Inc., an electronic marketplace for services, said the Internet also

has aided Indians. Before he co-founded elance in 1998, Anumolu had tried unsuccessfully to run a start-up in San Francisco during the early '90s. But back then, the environment was tough, he said. People needed a lot of

capital and a sales distribution playing field" because you don't need a dedicated sales force or shelf space in stores to set a new business running. Anumolu said.



# WORKSTYLES

## What's It Like to Work at . . . Tribune Co.

Four days after this interview, on March 13, Tithuru Co arrowned that it would acquire The Times Mitror Co, but it de-chined to comment on the effect the merger may have on Tithune's information technology organization. Till would be pre-meture to discuss any impact at this point," a l'ithure spokes-worran said.

woman said.
The merger is expected to be complete by the third quarter. The new company will remain in Discago, and John Medigan, Tribune's chairman, president and CEO, will keep his title. Interviewee: Karty America.

CIO Contigange Tisburne Co. ( severy triburne comp, a media company that operates newspaper publiahres, broadcesting, interactive media and education by

when media and education businesses, owner of the Chicago
Cach steedable team
Makin lecastion: Tribure Tower
Makin lecastion: Tribure Tower
town Chicago
Number of IT amployees:
25 in corporate IT, Just 25 to
mested with

employees (end users): About 15,000 Westlage, About 15,000 Westlage, About 8 a.m. to 6 or 7 p.m. for most IT staff. "but we're a 24/1 operation, so there are three shifts in the technical operations center."

operations center. This year's major IT leatisthear A PoopleSoft Inc. financial systems emplementation: "increasing networks from our sites and making it easier for www.s. adventions and subsorbiers to get the information they need": the convergence of voice and data over the corponate enhants.

Hiring plans: "We wil be hiring, but not aggressively. Memby it will be replacement hiring, with some growth hiring in a commercia. PeopleSoft and end-user support." Influme is really good at pro-Tribure is really good at pro-

Tibure is mally good at promoting and cross-training and slowing people to move into other areas. You can start in IT and and up in a business role in proadcasting, for example, " Bonus programs: Sign-on bonuses, spot performance bonuses, formal annual bonuse es di certain management leve es di certain management leve et and quanterly awards based on peer recommendators. Dress code: Businest cacual Types of efficies con permeter for directors and above. We're putting logother a lab where we'll be able to do some creative thinking and work with set thinking and work with set thinking and work with set.

puting logether a lab where we'll be able to do some creative thinking and work with new technologies. It will feature a duplication of our environment so we can run tests of upgrades or new routers before we put them into the production environment..., We're geets:

loys."
Must people carry beepers? Cell phones? Both, On-cal employess have laptoos and dial-up

access from home that's paid for by the company. Managers and escutives carry Palm devices provided by the company. Telecommuting pelloy," "We don't have one at the moment. A production of the third with relocommuting, and it don't have but May be done to by it again, but we're not

there yet."
On-site health club? "Not yet, but it's on the drawing board."

In-house california/food service: Yes. The one thing everycee complains about: Periorg. Favorina goasts topics: "Will the Cubs win the pennant?" Little partie: Forting new technology, like the PhirPilots and the latest laptops, access to Chicago Cubs Indext: hobecobing with Fribuna reporters or the selevators. A very aco were A very access.

had a puth to increase quality, and after that we all go to play beautiful at Whighey Fleet. Would assignly see that comfertable e-mailting the CEO. John Madiguer? To on 1 see why not. I would think so." Quarter in 150 years of publishing the CEO. While we have a see that the public of the purpose of the doct. We in a very proud of our history and who we are and what we do, and the IT.

staff supports that "

Lesle Gott

PAUL A STRASSMANN

# Practice ethical IT

RACTITIONERS IN MOST major professions subscribe to codes of ethics that govern their behavior. Trust is thus linked to expectations that a privileged expert will behave ethically. Such an outlook is essential in order for a modern society to operate, because we depend on the fairness

and good judgment of an advantaged few to tell the truth, abstain from giving self-serving advice and offer warnings when waste of valuable resources is discovered. Otherwise, corruption will invariably creep in, opening the door for government intervention.

My interest in the relationship between ethics and computing goes back to 1988, when I authored the code of ethics for the Data Processing Management Association. Professionals who successfully passed the examination to obtain a certificate in data processing had to pledge adherence to this code. To see how we have become accus-

tomed to lower standards of morality, as well as the rising insensitivity to IT errors, consider the following:

· A forthcoming conference for IT leaders features a tutorial that includes as topics "how to make other people cripge and whimper when you enter the room," "how to get what you want when you want it whether you deserve it or not," "how to act . . . without morality," "how to leave kindness and decency behind" and "how to seize the future by the throat and make it cough up money." The entire conference is offered to IT executives for a fee of \$2,380 each and to consultants for \$10,000 each, with an additional opportunity to purchase a hook that includes lessons on "how to get mean and nasty" and how to "lie

when necessary."

Microsoft launches Windows
2000 with claims of its extraordinary reliability, but its own list of potential defects and required fix-

es, which come to light a week after it released the software, it settimony to the company's long-standing track record of releasing faultprone products. One of Microsoft's own developers rationalized this situation by stating. 'The fact that Microsoft found that many begit indicates just both developed their testing when the product of the product of the proleme software.' An inheloding demonstration of Windows 50 by a key Microsoft executive before a federal pulge last year is another example

tell of how many employees in that wealthy firm subject customers to a skillful cover-up of the

# InfoWorld columnist Bob Lewis (Peb. 14) contracts the daminedly ample and successful 21st spending with the 30% success rate for all other IT projects. He argues that such an excessive failure rate may be the result of too-tight backets. This argument suggests that since IT project proposals aren't trustworthy anyway, management ought to always increase IT funds to the proposals aren't project to the proposals aren't proposals aren't project proposals aren't proposals aren't proposals aren't project project proposals aren't project project

for project to succeed like the Y2k nonevent.

So of its software, which interferes with other computer programs and Internet service providers without prior notice and without permission from the customer. It tends to disable, interrupt, alter and interfere with competing soft-firings. This case is an example of the arrogance that has become accepted behavior by IT



IT runs



# software suppliers. Executive Implications

Marie Antoinette, who like her husband. King Louis XVI of France, husband. King Louis XVI of France, was beheaded in 1973, is popularly thought to have said. "Let them est cake," when she heard that peasants didn't have enough bread and were starving. I hear too many examples of a similarly smug disregard of IT troubles.

No one will lose his head over this. But IT runs the risk of inviting soverament regulations and mandatory compliance with 'best practices' promulgated as universel codes, which will greatly erode all the personal freedom, creativity and prosperity with which computer profession.

and prosperity with which computer profession als have been hlessed so far. To postspone this, get a copy of any code of professional ethics (see http://csp.iit.edu/codes/computer.html), put it into practice, and demonstrate less tolerance for many current transgressions. •

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- Serviceable while load is up and running Additional battery modules increase runtime and all the modules are hot swap-
- pable, meaning no downtime.



ow you can usually message power to your systems. PC MosterSwitch" in your communications and impoter racks can save you time and messay by olping your staff to message power proactively.



PowerView" is a head-held control panel for networ administrators that configures and controls UPSs in rack, computer room, and dataconter povironments.



Not having a Symmetra in place would have resulted in last data, compated hard drives and last time to recover. The Symmetra system has more than paid for said faving this one outage."

Bel Lester and Charlie Biss. Information Technology Fael Lesters.

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# Signs<sub>of</sub> Defection



Want to hold on to your key staffers? Watch out for the warning signals they may be giving off if they're thinking about jumping ship. By Steve Ulfelder

JHIN MAKE WINSTAD WAS ADOUT READY TO quit his old oil, he actually grave less nature growth and to his manager. No longer an information nechools of the manager. The longer and information nechools of the manager. The dish't give too much care anymore about job training issues, growth opportunities; he says, while orthooner thought will fill the shift in behavior) was maturity, while orthooner shought will fill an behavior) was maturity, while orthooner shought will fill an behavior) was maturity will be orthooner thought will be about the behavior of the property of the shift of the shift was becoking for the next passing shift.

Winstead is now a very content systems programmer/analyst at Bethesda, Md-based Lockheed Martin Corp's Technical Serviced division. His tropor in the final months at his prior job is textbook behavior for IT pros who are ready to vamoose, according to experts. By waving the white flag on working conditions, Winstead was waving a red flag that an astute manager could have noticed, perhaps preventing his deserture.

You know turnover is Problem No.1 in IT departments. You know that you're paying more attention than ever to retaining IT workers. Bringing new people up to speed is a pain in the neck— and they're unknown quantities who may not be worth bringing up to speed.

# BUSINESS

But do you know how to read the signals employees send when they're thinking about bailing out? Those signals can be counterintuitive, as can respooding to them correctly. And how do you sort out the might-be-solverables from the snowball's-chances

#### Profile of a Ship-Jumper

Here's the good news: There's a pret-ty reliable profile to identify workers most likely to be looking around. The bad news: It's a profile that probably fits an awful lot of your employees. People who've been out of college five to 10 years and hold electrical engineering or computer science degrees are the ones to watch, according to Fran Quittel, a high-tech career expert who authors Computerworld's "Career Adviser" column and has created the career Web sites www.careerbabe.com and www.yourcgreer.com. Other experts place the danger range at five to seveo years. But all agree with Quittel when she says, "If you're not getting people up to speed in different tech-

ogies, you're going to lose them." "If the work's boring, people doo't stick it out," says Keo Surdan, CIO at Send.com, an online gift company in Waltham, Mass. Send.com has a neeligible turnover rate - partly because it's a hot pre-initial public offering start-up, but also partly because Surdan tries to spread the tasty projects

around to keep the entire staff excited. New challenges go hand-in-hand with hot technology. According to Patricis Christensen, vice president of human resources at Chicago-based software vendor Cybory Systems Inc. and co-chairwoman of the Arlington Va.-based Information Technology Association of America's Human Resources Forum: "If there's a lack of challenge in the work they've been givco or they've been in the same position for a very long time," IT workers are bound to be 'looking for challenging

opportunities." Even more than other professionals. IT workers believe, "I have to watch out for myself, keep my skills relevant and marketable," Surdan says. If you aren't helping them stay up-to-date,

you're pushing them out the door. Steve Thornburg started to think seriously about leaving a job in March one year. "By September, I decided Thanksgiving would be my cut-off date," says the engineer, who has m than 20 years' experience in IT. "I felt disappointed and I felt sad" about a turn of events at his company.

#### Early Warnings

Some signs that ao employee is testing the waters are pretty obvious. ome areo't. Here's a list:

They come in late and leave early.

"Here, people stay until the job's dooe," Christensen says. "If they're not spending the time, you can pretty much tell" something is wrong. They start taking sick time, taking vacation," Quittel says. "They start speaking in whispers." (Winstead

asked on short order for a day off for 'family husiness.' " He says that's when his manager knew he was gone.) If the office slob suddenly discort pressed slacks and sport coats. (If you're lucky, it's an affair. But it's prob-

ably a head Lack of participation. "If someone who's always been participative with draws, doesn't volunteer to work on a project," that's a danger signal, Christensen says. This passivity may take the form of agreeing with statements that previously would have launched a

flame war. Experts also say employees who exress new interest in projects' tim ames bear watching. They may be leery of long commitments because

they suspect they woo't be around to see them through Remember Winstead, who says he grew less grating once he'd decided to leave? Previously, he was an office agitator. His boss didn't pick up on his

shift in demeanor until it was too late That's an important point, according to John Putzier, president of FirStep Inc., a Prospect, Pa., human resources consultancy. "Voiced dissatisfaction typically comes first," Putzier says. "This is the early warning sign man agers should seize on, because the worker's unhappiness can be chan-

neled into constructive change." Here's the problem, though: Most IT managers ignore this voiced dissati faction, hoping it will go away. Why? Because it's easier to ignore it and avoid a confroctation. Managers cor vince themselves that the employee

will get over whatever his problem is But you ought to face the music and talk to the employee about his unh piness, Putzier says. If you don't, the dissatisfaction turns into apathy. Note the way this apathy completes the vi-cious circle: The worker no longer seems unhappy. The manager convinces himself he was right - the

problem did go away. Uh-uh. It's the employee who's get-ting rendy to go away. That apathy is the manager's worst nightmare advanced sign that the employee has

mentally checked out. "It's only a matter of time," Putzier says. Too many managers ignore early sig-nals that workers are itchy. If you let such a situation fester, you can expect another behavior change. But it's prob-

ably too late to do anything about it. Note that both Winstead and Thornburg describe passive feelings and behavior once the die was cast. They were "sad," they "didn't give too ma care," they were "disappointed." That's the spathy Putzier describes.

Before they jump ship, IT workers may try to "rally people around their perception" that the company or their boss is no good. Putzier says. Misery loves company: Such workers are "trying to find other malcootents or poten tial malcontents," he says.

If they succeed, watch out. One engineer who requested anonymity helped build a computer retailer's training cooter. He was rewarded with a move to the retailer's fledgling corporate division. But "the company applied a re-tail mind-set to engineers," the source says. Bad feelings snowballed. Upshot: As a group, a team of II folks walked out on the same day.

#### What to Be

So what do you do when you suspect, but doo't know for sure, that an employee has The Grass Is Greener Over There Disease? Your best bet is to sip turnover in the bud io all the usual ways. Communicate. Spread the glamour projects around. Help workers upgrade their technical skills. Make sure your compensation package is competitive in your industry. And keep this chilling quote from Putzier in mind: "If you look at the reasons for turnover, they're almost all a variation on 'My boss is a lerk.' The lerk bosses. want to assume it's about money - because that gets them off the book."

Ulfelder (ulfelder@earthlink.net) is a freelance writer in Southborn, Mass.

If you're not getting people up to speed in different

technologies. you're going to lose them. FRAN QUITTEL. HIGH-TECH CAREER EXPERT AND COMPUTERWORLD COLUMNIST

red desatefaction and act on it." I

# **Parting Lessons**

en if you do everything right, people will nik about leaving. What you do about the



# Keeping Your Star **Performers**

Why does a star performer up and leave the company? James Waldroop says it isn't usually for money or any of the other reasons typically given but rather because the job doesn't tie into what makes the star happy.

The manager must help people dis-cover what that is and sculpt a position that allows its expression, says Wald-roop, co-author with Tim Butler of "Job lpting: The Art of Retaining Your Best People," which appeared in the September/October issue of Harvard Business Review. Waldroop, associate ctor of career development at yard Business School and principal ment firm in Brookline, Mass., talked about job sculpting with Computerworld senior editor Kathleen Melemuka

You say it ion't safe to easy who excel at their work are happy in their lobs. Why not? I'm pretty mond at changing tires, and if you paid me enough I could really turn that lug wrench, but would I be happy?

People in the engineering and technology field were often coun seled in that direction because they're good at math and science,

and they went. It was easy and it was a good job. But they never liked it.

And that's where deeply embedded life interests come into the picture. Can you explain what that means? By deeply embedded life interests, I'm not talk-

ing about passing fancies like col-lecting gold coins. I'm talking about interests in the core activities of doing business. By the time people reach early adulthood, their interest oatterns are set for life. We've identified eight broad, core functions that apply to a variety of work. [See box below.] People generally have two or three. In that combination of interests, you can find the right path.

Can you give me some examples of it you can help an employee align his life interests with his career? Take some-

body interested in application of technology and creative production and we might be talking about Web design or working for George Lucas (an computer effects for movies) technical but creative. But if you fold in managing people, then we're talking about a different animal: somebody who might like managing that group. Then somebody who likes to influence through language and ideas wants to be closer to the customer: a product manager who really thinks about how to set people to buy this thing. The person who likes enterprise control wants to be running the show - maybe starting the business or taking it over - man ine from a strategic point of view

What happens when someone's job doesn't murture his life interests? There are some life interests that

you can express outside work Someone with a desire to mentor might become a Big Brother, for example. But many people will be miscrable and will eventually out without realizing why they're quitting.

So people may not know what their life interests are? Not necessarily, and they make career missteps as a result. They go from Company A to Company B. and they still aren't expressing their life interest because they're doing the same old thing.

How can a manager help? When an individual says be's tired and burned out, a manager can help him figure this out and fine-tune the work rather than lose the person.

sie? You've got an engineer who is interested in counseling and mentoring, but be's spending [all of his timel in front of a terminal. Maybe this person can set up a mentoring program for new hires. If be's also interested in influencing through

Isograper and ideas, he might be sent out on the road periodically to do

Let's say there's an interest in influencing through language and ideas, but not in mentoring. That person might stay in the engineering role, but also work as liaison between his group and the sales and support folks. If be's really into creative production, be could work with the people who write the manuals.

Se you can make fairly minor change start with small changes that will evolve ever time? Absolutely. But they can also be major changes. If somebody really ought to be moved into something different, move him

w can I incorporate this kind of thinking at my company? As an individual nager, you can use this as a model and say. "Look at this list and tell me what you think you are." But that's a suboptimal approach, because it communicates that the manager cares but not that the entire organi zation does. And a manager doesn't know enough about all the jobs in the company and what their activi-

ties are to be able to split a person's

time 80-20 [ratio between two func-

tions or whatever it takes.

If there's an organizational conmitment, you make the decision that this is really something you want to put energy into, and you sell it to your employees as something that will belp them find the right place to make their career interesting and useful. You have no idea what a competitive advantage that is when recruiting

How do you know this works? We have no hard data: the tools and concept haven't been around long enough for that. But our experience is absolutely consistent that when people are able to mold their jobs to fit them a little bit better, they stay, 9

# The Eight Core Life Interests

# "r" you capitalizing on your assets as you move to "e"-business?

You've got significant investments in data and applications. You've got relationships with partners, customers and suppliers. And, you've got a highly skilled staff.

Now, you've got to get up and running on the Internet. But how do you successfully move into the e-business arena without sacrificing all that you've already invested?

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**WHERANT** 

E-commerce continues to dominate new IT hiring; meanwhile, demand for contractors is dropping fast. By Sharon Watson

ICK AN IT 10B — any IT job — and no matter what the actual title is, chances are very good it's woven into the Web in one way or another. According to leading information technology recruiters, all the hoc jobs they

expect to fill this quarter are being driven by electronic business and its demands, including the usual suspocts like Web applications development and lessobvious ones like Unix network administration.

"Web and e-commerce projects are pivotal to generating revenues and reducing costs, so everyone wants to get theirs done faster and better," says Alan Fiermonte, vice president of business development at ReviewNet Corp., a recruiting firm in Philadelphia. candidate's job market, with fierce competition for applicants skilled in any of today's hot technologies, from Java to Unix to Oracle, as well as those technologies that are just starting to simmer, such as e-commerce development platforms like San Diegobased Miya Corp.'s Miya Empresa.

Most job openings are new ones that have been created by the electronic-business sarge, though losing talent to competitors does open some posi-

tions. That's just one of the realities that companies recruiting IT takent must face, say recruiters. The fact is, many IT professionals want to work with hot technologies. If old-line companies can't

# Ist Quarter

HIRING SURVEY

# **BUSINESS**CARFFRS

offer leading-edge projects, dot-coms may bure away talent with their promises of fortunes driven by initial public offerings. Many recruiters in hot markets like New York and the West Coast say they've seen candidates walk away from high five-figure salaries plus benefits in favor of two-thirds as much money and a fistful of stock options.

Additionally, many employers lose good talent because it takes them too long to make an offer, say recruiters. "There's no time for two or three interviews," says Judy Karpel, a partner at New Yorkbased IT recruiting firm Hayward Simone Associates Inc. "Good people get lots of interviews and are off

the market very quickly."

Though IT professionals do seem to be sitting in the cathird seat, recruiters caution them on several fronts. First, employers want people with proven skills, so experience does count. Next, recruiters say, IT professionals need to stay current with new Web technologies, which seem to emerge every month. "Make sure you're learning the skills that will be hot six months from now," says Bya Talman, president of Roy Talman

& Associates, a Chicago-based FT recruitment firm. Such skills may include the XML content-tagging language, as well as Java, Extensible Table Markup Language, Miva Empresa and Personal Home Page, a server-side scripting language

Also, because electronic business requires IT staff to work closely with customers inside and outside a company, communication skills are more critical than ever, say recruiters. "Even hard-core developers are being exposed to customers today," Karpel says.

So for IT people with the right skills and experience, the following positions are the ones IT recruiters say will be bot this quarter



## E-Commerce Project Manager

onsibilities: Develop and lead e-commerce strategy; act as a liaison among senior management, IT project teams and ternal and external clients. Also generate ideas for Web content and tools, define business

requirements and lead technical teams to implement

lary: \$105,000 to \$110,000

· An extensive IT background, with an emphasis on e-commerce consulting and/or experience with application development.

 Project leadership skills. · Demonstrated experience in the employer's specific industry.

Advice to hiring managers: Ask e-commerce surus for evidence of their successes elsewhere, recommends Bob Otis, vice president of advanced technologies at Atlantic Research Technologies, a Stamford, Conn.-

based search firm. Advice to candidates: "Before taking the job, make certain you understand the employer's e-comm vision," says Otis, noting that not all firms have the will



#### Web/E-Commerce **Applications Developer**

Responsibilities: Create intranet- and Internet-based applications, with increas ing emphasis on e-commerce applications. Also integrate new applications with existing

internal applications such as enterprise resource programs, databases and data wareh Continued on page 48 IT Hiring Projections by Major Industry

INVESTOR niness pervious 23 99 +79h Insurance/real estate/financial 198 302 40. 33 406 Publishing 24 10 -8% 1696 Value-added resollers 112 3 270 1,270 -5% -5% Software development 156 901 500 195 +89+ Wholesale/retail CR 234 +19+ 33 796 Computer menufacturers 56 722 A906 34 -3% 60 ACH +396 90 7% 133 1802 096 State and local government 120 198 -10 \*\* 44 Health care/medical services 133 177 -2% -22% Manufacturing 215 136 306 -94 183 226 -4% 35 .73 108 -596 23 Federal government and military 190 1563

IT Hiring	Projections	bу	Region
Number of companies			

-79 67 -99-

REGION (states)	companies surveyed		Three-month staff bring arejection		
New England (Conn., Mass., Maine, N.H., R.L. Vt.)	139	806	-495	14	-10%
Mid Atlantic (N.J.NY_Pa.)	309	683	+2%	322	396
Pacific (Aleska, Celli, Hawari, Dre., Wash.)	249	1,437	0%	233	-3%
East North Central (II., Ind., Mich., Ohio, Wis.)	361	559	0%	96	-9%
West South Central (Ark. La., Texts)	145	363	0%	64	-5%
South Atlantic (Del. D.C., Pa., Ge., Md., N.C., S.C., Va., W.Va.)	390	548	-1%	69	-2%
East South Contral (Ala. Nr. Mes., Tenn.)	68	1,224	2%	12	-4%
West North Central (lows, Ken., Mirn., Ma., Neb., N.D., S.D.)	130	175	-12%	101	-72%
Mountain (Ariz. Colo., Idoho, Mont., Nev., N.M., Okis, Utah, Wyo.)	98	379	-13%	119	-9%
Total/overall change	1.899	-	-2%	-	-7%



Computerworld's National Survey of IT Leaders is mailed to more than 4,000 IT professionals each month. The survey asks about IT budgets, current IT hand count, hiring needs and the importance of a number of inchrologies over time. Respondents are asked about their current permanent and temporary IT head counts, as well as their anticipated head anted here represents the responses of 1,899 organizations in the U.S.

ry: Varies with res bilities, experience and skills, from \$65,000 to \$130,000

· Experience in one or more of the following: Active Server Pages, ColdFusion, InterDev, Java,

JavaScript, XML, Visual Basic, VBScript, Common Object Request Broker Architecture, Component Object Model/Distributed Component Object

Model, C++ and Perl. • Experience with e-com One-To-One, PureEcommerce, Blue Martini, Site Server, Vignette and Webridge.

• Previous high-traffic e-commerce Web site

design and construction. riedge of Windows and Unix, as well as

Knowledge or wassess and ona, as well as distributed computing environments.
 Knowledge of relational databases such as Oracle, SQL and Informix.

rice to hiring managers: Don't get hung up on experience. "Some people with less experience have more talent than veterans," says Danny McKinny, a vice esident at J. D. Resources Inc. in Memphis. lates: Know the difference between

"exposure to" and "experience with" programming tools, says Alesha Duggins, a vice president at Diamond Star Technologies Inc., an IT recruiting firm in Orange County, Calif. "Until you show you've used it in a real-world corporate environment, it's not experience."

#### Senior Unix Network Administrator

ponsibilities: Administration, plan ning, design, coordination and control of Unix environ ary: \$75,000 to \$110,000

· Five or more years' experience in large enterprise Unix environments, especially Sun Solaris and HP-UX.

 Strong scripting skills Knowledge of Oracle and other relational databases.

 TCP/IP knowledge and experience with e-commerce platforms like BroadVision. Good management and communication skills.
 Experience with security a plus.
 Advice to hiring managers: "There's a high demand.

but they're difficult to locate because they prefer to work on a contract basis," says Sarah Mino, director of eSearch at LeadersOnline Inc. in Irvine, Calif. Advice to candidates: Unix administrators with strong security backgrounds can increase their salary demands, recruiters say.

Senior Database Administrator

Responsibilities: Design and develop the

logical and physical layers of various databases; manage database distribution, security and access requirements; oversee performance monitoring and tuning; manage upgrades, maintenance and user support; handle testing, reporting, backup and restore. Salary: \$75,000 to \$130,000

· Oracle experience is very hot, but SQL, Sybase and Informix administrators also are in demand. Experience with Active Server Pages, Common Gateway Interface, Visual InterDey, Java and object-oriented programming

· Experience with Windows NT and Unix ice to hiring managers: "There's no talent available on the Oracle database side," warns Morris Green, a partner at Hayward Simone Associates. He and other recruners say Oracle database administrators and most other types of database administrators can command befry salaries — and dot-coms want them. too, and are dangling stock options to get them.

Advice to candidates: Recruiters say adding e-commerce skills to your portfolio will take you to the bith end of the salary bracket.

#### **Data Warehouse** Architects/Developers

usbilities: Design and developm of data warebouses, including evaluation and specification of networking, hardware. software, applications, middleware and extract. transfer and load tools.

Salary: \$100,000 to \$150,000

 Online Analytical Processing and Relational Online Analytical Processing experience. Experience with Open Database Connectivity tools as well as with data mining and modeling tools.

· Experience with SQL, Oracle, DB2 and other relational databases. Advice to hiring managers: Competition is very tight in this area, and salaries scale accordingly.

Advice to candidates: Companies seem to be settling into their database platforms, so skills in one prod might not be seen as easily transferable to another, save Fiermonte

#### Sales Engineer

Responsibilities: Provide technical expertise in layman's terms during the sales process; supply hands-on technical skills during the implementation process; serve as a

liaison between the customer and technical staff. Salary: \$75,000 to \$140,000 base

 Technical skills vary, ranging from networking. expertise to programming languages. . Strong communication skills, especially in

delivering presentations. Advice to hiring managers: It's tough to find this combination of skills in one candidate: at least one client has split the job into two, says Joe Hauser, president of Montvale, N.I.-based IT recruiting firm Search

EDP Inc. Advice to candidates: "You've got to be technical but also business-savvy," savs Karpel, P

Watson is o freelance writer in Chicago

There's no time for two or three interviews. Good people get lots of interviews and are off the market very quickly.

JUDY KARPEL, PARTHER, MAYWARD SIMONE ASSOCIATES INC



# INTERMEDIA'S FRAME/ATM: 99.99% RELIABILITY

intermedia

# Just-in-Time Learning

N A RAPHUS CHANGING business environment where information can anickly become obsolete. staying on top of training can be a mountainous task.

Rather than beging complex ees take time away from work to sit through traditional class room courses, many companies are using technology based, self-puided tutorials and databases that allow users to focus on "nuggets" of intormation as needed to perform specific tasks and solve problems as they crop up.

The mind-set of just-in-time learning is: "As soon as I have this little piece lof information I. I'm out of here," explains Heinrich Koenen vice mestdent and dean of The Masse Center, a learning and technolony think tank in Surstanti

Springs, N.Y. Just-in-time learning incorporates Web- and intranetbased applications as well as CD-ROMs, satellite channels and videotares.

Companies save travel and education costs. And workers like the just-in-time approach because they can train at their own pace, wherever and whenever they like.

Users can customize their training to fit their needs and engage in online collaborative learning communities, wherethey can exchange experiences and access the latest opinions from around the world.

#### At Your Fingerties

Electronic learning is big at IRM, Last year, the company saved \$200 million in internal training costs related to traditional training sessions and time away from work, according to Rick Horton, general manager of IBM Global Services' Learning Services group. IBM provides its 6,000 busi-

ness partners with IO satellite channels of partner and prodoct information. The system was set up because IBM partners said they weren't petting information fast enough to sell IBM products, says Hortun. Satellite receivers can be Just-in-time learning systems deliver training to workers when and where they need it. Rather than sitting through hours of traditional classroom training, users can tap into Web-based tutorials, interactive CD-ROMs and other tools to zero in on just the information they need to solve problems, perform specific tasks or quickly update their skills.

# Various Just-in-Time Learning Delivery Methods

Just in time knowing can be delivered in a covery of ways, depending on a company's basining budget, technology have and the type of training needed. Here are some of the benefits and drawbacks to vanous delivery methods.

Veb- and Accessible anytime, from any PC Easy to update or add information

Offers intreactantly and levelback Accessible anviews, Inner any PC Provide multimedia, highly interactive

Easy to update information Foragen content

Engenting content

installed at any location, and last year and is expected to for \$1,500 per year, users get grow to \$11.4 billion in 2003. access to the most recent prod-Cost savings is one factor uct-specific news and partnerfurling this growth Cushing polyted appropriate 1831 Anderson, on IDC analyst, also set up a Web-based applisays one day of classroom cation to supplement the sateltraining typically costs \$500 to \$1,200, while one day of elec-

Another initiative, called tronic learning runs from SIOO Sales Compass, a Web-based to \$500 application that gives IBM There are also bue savinos salespeople the latest informain increased productivity and tion about their customers officiency. Online training outs prior to making sales calls. time by letting users grab only helps salesprople make effecthe chunks of information they need from the convenience of Analysts and corporate lead-

their desks. Just-in-time learning is also helping IT staffers keep up with changes in technology "IT training is essentially perishable, says Anderson. The

just-in-time approach allows IT workers to update their skills continually, whereas the knowledge gained from classroom training can quickly become obsolete, he says. Just-in-time learning isn't

CONS

A lot of Web training is still test interesaw-

not as engaging as some other methods

Limited stuffments carabities

information is limited to what was

Expensive to update and welvarin

Receiver must be set up for access

No interactivity or feedback

Not as accessible as PC-based

Expensive to update or redistrit

No interactivity or feedback

recorded on disc

No feedback

just for in-house training and support. Some companies use Charles Schwab & Co.'s electronic brokerase unit launched an interactive Webbased learning center in December to provide free invest-

ment education to prospective and existing customers. Alshough the brokerage expects that a reduction in customer information requests will cut costs, "that wasn't the driver," says Janet Lecuyer, vice president of electronic learning at Schwab's electronic brokerage unit.

Educating customers reduces their fears about investing and "moves them along in making a decision to invest,"

she explains Schwab's online learning center, which offers courses in the fundamentals of investing and will later offer material for more advanced investors. was set up so customers can go through an entire course sequentially or choose only torics of interest

The learning center was de signed to be convenient to use. because customers said they didn't have time to commit to a specific curriculum," Lecuy er notes. "They wanted to be in control."

Striking a Balance Just-in-time learning is purticularly useful in the IT world. says Anderson

"IT lends itself to linesin-time] learning," because this type of training is often very step-based, he says. And IT trainces are more comfortable with online delivery methods than others might be,

But just-in-time learning has limitations. Most analysts and users say it won't replace classroom instruction altogether. Sue Goldberg, president of

Northeast Training Group Inc. in Chestnut Hill, Mass., says just-in-time learning works only up to a point. Most studies, she explains, indicate that instructor-led training is still the best way to learn

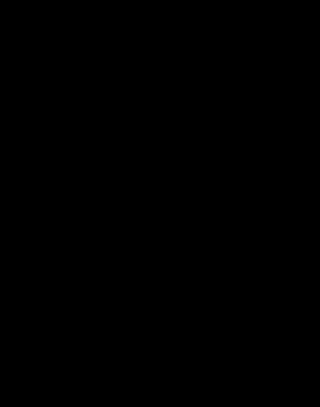
The idea that just-in-time learning will replace classroom instruction is "baloney." says Anderson. Corporate training, he says, will eventually evolve into a mix of delivery methods

"You have to offer a range." says Anderson. "The delivery vehicle will always depend on the content " Sambataro is a freelance

writer in Salem, N.H. Contact her at monica sambatarous computerworld.com.

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tive pitches, says Horton



# **Just-in-Time Learning**

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installed at any location, and a for \$1,500 per year, users get access to the most recent product-specific news and partnerrelated announcements. IBM also set up a Web-based application to supplement the satel-

lite system. Another initiative, called Sales Compass, a Web-based application that gives IBM salespeople the latest information about their customers prior to making sales calls.

belps salespeople make effective pitches, says Horton. Analysts and corporate leaders say electronic learning is mushrooming. According to Framingham, Mass-based International Data Corp. (IDC),

Just-in-time learning is also helping i'l staffers keep up with changes io technology. "IT training is essentially per-ishable," says Anderson, The

last year and is expected to grow to \$11.4 billion in 2003. Cost savings is one factor fueling this growth. Cushing Anderson, an IDC analyst. says one day of classroom training typically costs \$500 to \$1,200, while one day of electronic learning runs from \$100

to \$500. There are also big savings in increased productivity and efficiency. Online training cuts time by letting users grab only the chunks of information they nced from the convenience of their desirs.

based learning center in December to provide free investment education to prospective and existing customers.

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Rringe & Ctr

riggs & Stratton did.

Set the whole blory, and a tree CD from

IOE AUER/DRIVING THE DEAL

# Creating 'zones of consideration'

E OFTEN HAVE THE ABILITY to generate significant negotiation power to achieve our objectives in any deal for a product or service. By creating a "zone of consideration" to evaluate and negotiate with more than one qualified supplier, we can leverage our control of the process. But too many times we give away our power before negotiations even begin.

All too often, a scenario like the following occurs: A large bank I'm familiar with always seeks the best deal for its ongoing IT procurement function.

Normally, the bank performs an initial evaluation, narrows the field of potential suppliers then solicits a "best and final" offer from each. After further evaluation, one offer is selected. The bank then notifies the selected supplier that it has won the contract, tells competing suppliers a deal has been made and arranges to

negotiate the contract. But recently, after being rold that its "best and final" offer had been selected, the supplier raised new issues it wanted to negotiate before signing a ract. Because the hank had sent away all other potential suppliers, it lost its leverbank's selection of the suppli-

age. The selected supelier no longer had to worry about competing for the contract. As a result, it had no incentive to move quickly to finalize a To make matters worse, the bank needed the products quickly. The selected supplier

used this as leverage to get the contract signed. It had to do little more than wait, while the bank was faced with forking over more money to ensure timely delivery. Ultimately, the supplier got an additional fee from the bank, a fee that became an issue only ofter the

er's best and final offer. You can reduce the risk for this type of problem by conducting negotiations with competing suppliers through a zone of consideration. After an initial evaluation of

offers, identify a small group of suppliers whose offers are most qualified. Then advise them that they've been selected, along with a few commeritors, for further evaluation and negotiations through your zone of consideration.

It's critical that all suppliers understand the following

• You will negotiate with each of them, based on their most recent offers, until you award and sign a contract with one. · Your evaluations of all qualified suppliers will continue throughout your concurrent negotiations. (Incidentally, you will learn incredible new things shout some compliant

during negotia tions that sometimes can actually change your opinion of them from a "must have" to a "never ever.") ■ You may choos at any time to discontinue negotiations with any po-

tential supplier Provided that you have perotioned all outstanding issues with a supplier. you can simply se lect that supplier immediately, without giving any oth

pliers a last chance or a deal to heat (unless the selected supplier fails to promptly execute your contract). When suppliers

know they will not get a "last look" or a "deal to beat," they get very serious about getting their best deal on the table quickly, because they fear they In light of these facts, admonish suppliers in the zone to make absolutely certain that they have their best curres offer on the table at all times. because that may be their last

The zone of consideration provides a framework for you to assume control over the timing and power in the neg

tiations. Maintain ing the zone until a contract is actu ally signed with the selected supplier can reduce the chances that the supplier can gain further con cessions by raising new lastminute femes

What's more you should com plete contract nepotiations prior to selection, since their willingnes to provide a good contract should be

one of your major considerations Maybe just as important, the suppliers have an incentive to get you a great

deal quickly, before another supplier snatches your business. This sure beats an arm gant selected supplier who gives you only pillow talk while you run out of time and fall into its hands like an overripe plum!

# Order Management

rs. The first version of the Java recurement and other tasks

a Web sits that sales exec n place to add fee-

# Web Markets

Calif., last week said it plans to co One Inc.'s Mark

via the Web. Pricing starts at \$100

# Net Ads to Pass TV

vertising deliars will flow to the in-ternet than to television in the next five years. The Myers Group LLC, as Endicott, N.Y.-based economic re-

from \$4.32 billion this year to \$32.5 billion in 2005. U.S. tele sion ad money will increase from \$16.8 billion to \$19.2 billion over

set the figure at a much use

med of \$11 5 bills



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# TECHNOLOGY

# WIRELESS

After finding three security problems involving password and creditcard protection with wireless phone purchases from the Amazon.com Web site. Gartner analysts suggest that corporate IT departments be alerted to similar problems when they set up phones for data or e-mail access, a 58

First there were glasshouse mainframes, then distributed workgroup servers. Now some say the headaches of both are combined into centrally managed server farms. Four brief case studies demonstrate that managing server farms can be a much more complex task than running a mainframe data center ever was. But good IT people are making it work. . 68

# TESTING, TESTING

Amid the rush to quickly develop and deploy applications for the Web, vendors selling application components are also offering testing services to pick up structural design flaws in applications minted from prebuilt components. • 58

# SECURITY

In Week 4 of the security manager's journal, "Pat" finds he's no longer everybody's friend now that he's trying to set and enforce security policies He has support from his boss on modem pooling. but defers actions on passwords. > 60

#### **EMERGING** COMPANIES

It's a great idea: Upload presentations, large financial reports and graphics files just once to Click2send.com Inc.'s online storage vaults, then let recipients view and download the files securely. But can this start-up convert a nowfree service into a moneymaker? > 72

# HANDS ON

Reviews editor Russell Kay installs Linux on his home machine and lives to tell about it. After that, it's back to Microsoft land for a dynamite new mapping application. > 61

## CKSTUDY

memory, which boosts a computer's performance by keeping the most frequently used data and instructions physically close to the processor, where they can be retrieved more quickly. > 82

# SKILLS SCOPE

e-commerce is where the hot action is, and e-commerce networking professionals are the folks making it happer Salaries start at around \$90,000 per year, with bonuses and stock options often part of the mix. And future

ally unlimited + 76



# SOME CLOUDS IN **COMPAQ'S FUTURE**

IN A COMPUTERWORLD SURVEY, customers and analysts say Compaq is doing better than it was a year ago, when its CEO was ousted. But challenges for the company remain as it moves to a direct sales model, faces stiff competition from Dell in the U.S. and struggles to serve high-end users it inherited when it acquired Tandem and Digital Equipment Corp.

# Security Risks Arise With Wireless Apps

Analysts say lack of credit-card, password protection instructive to those writing apps

CHIDING WIRELESS applications? Analysts warn that usine handhelds and smart phones to work wirelessly over the Web can raise some security risks. Two analysts at Gartner Group Inc. in Stamford, Conn. recently raised three specific security issues, based on using a Sprint INCS Group windows phone to buy a book from the Amazon.cum Inc. Web site. They said the concerns, which involve password and creditcard protection, suggest serious implications for companies moving to provide wireless

Here's what harmoned: Gartner security analyst John Pescatore borrowed the Sprint PCS phone of colleague Bob it was easy to place an order with Scattle-based Amazon com. Pescatore contacted the site wirelessly to buy a Harry

Pescatore was prompted to enter his Amazon com user name and possword. He was shocked, he said, to see his password appear as he typed it in, rather than have it hidden with a series of Xs, as one might see when typing a password using a Pt. Problem I

Then, Pescatore was asked if he wanted to how the book. He

when he clicked a "yes" box. the order was completed without his entering a credit-card number Even though Pescatone had previously used a credit card at Amazon vas a PC. he had specifically decided not to use the trademarked I-Click easy purchase option (I-Click allows Amazon users to store a

credit-card number and ship

cone information with Amir-

can t Problem 2 Problem 3 occurred a week later, when Pescatore asked Fuan to scroll back in the phone's memory. When he did, buan found Pescatore's user name and ressword stored in cache. He ordered another book usine Pescatore's credit card, the analysis reported. Sprint PCS said the practice of showing the possword will

keyboard and screen would make it too hard for a user to input a password if it were X'd our.

"his a technology trade-off," said Billy Stephens, director of product manage-

ment and development for wireless data services at Sprint PCS in Kansas City, Mo. Resarding Problem 2.

on Amazon.com official denied that Pescatore could have ordered the book without inputting the englished inforassism unless he had enabled I-Click in a prior visit. As for the eaching of the

password, Stephens called it a glitch on our part," since it isn't Sprint's policy to allow caching of a password. Corporations might face dire consequences if they create

applications to allow smart phone access to e-mail or corporate data and a password is stolen. Pescatore said. "What if somebody steals your company's network password from a cell phone you lost in an airport?" he said.

ng a Sprint PCS

# JOHN PESCA TORE, a se ty analyst at

#### e-mail access to employees. Correction: Security, Not Data, Toos List

Due to errors in calculation an proofing, a chart and article or information technology buying frends for this year I'TT Spending Trends, Data ts King," Technology Aech 271 contened inaccurate

The most important buying decisions facing IT managers are actually security, wide-area network infrastructure and enterprise databases. followed by Web-to-database contems. Web content-management tools. Web server poerating systerms, stocane-area networks (SAN)

With nextremence management The chart also incorrectly inted the order of the criteria that IT mandatabase, SANs and desktop re cement systems.

A corrected version of the chart appear at right. Full, correct results are also posted at our Web site. www.comoutenworld.com

## continue, because the small Top IT Purchasing Decisions in 2000

#### The top 10 buying decisions IT managers will make this year

1. Security 7. Web server operating system 3. Enterprise databases 4. Web-database connectivity

DECISION

9. High-speed Internet access

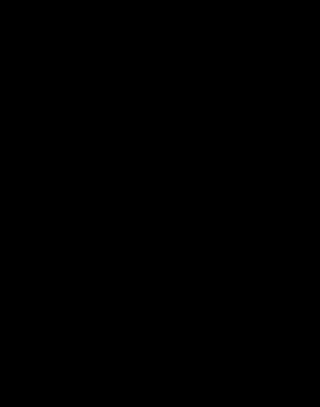
What do IT managers consider when investing in an enterprise database?

What do IT managers look for when ch a storage-area network?

What do IT managers look for when buying desktoo replacement systems?

DECISION Quality of wendor support I one-term total cost of own

Based on an exclusive Computerworld sorvey of 223 IT managers who acquire rechnology for their organizations. More than one response was allowed pa



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Pescatore was prompted to enter his Amazon.com user name and password. He was shocked, he said, to see his password appear as he typed it in, rather than have it hiddeo with a series of Xs. as one might see when typing a password using a PC. Problem 1. Then, Pescatore was asked if he wanted to buy the book. He

when he clicked a "yes" box. the order was completed without his entering a credit-card number. Even though Pesca-Here's what happened: Garttore had previously used a credit card at Amazon via a PC. he had specifically decided oot to use the trademarked I-Click easy purchase option. (I-Click allows Amazon users to store a conditioned number and phinping information with Amazon.) Problem 2.

Problem 3 occurred a week later, wheo Pescatore asked Egan to scroll back in the phone's memory. Wheo he did, Egan found Pescatore's user name and password stored in cache. He ordered another book using Pescatore's credit card, the analysts reported. Sprint PCS said the practice of showing the password will continue, because the small lost in an airport?" be said.

keyboard and screen would make it too hard for a user to

input a password if it were X'd out "it's a technology trade-off," said Billy Stephens, director of product manage-

meet and development for wireless data services at Sprint PCS in Kansas City, Mo. Regarding Problem 2.

an Amazon.com official denied that Pescatore could have ordered the book without inputting the credit-card infor mation unless he had enabled 1-Click in a prior visit.

As for the caching of the password, Stephens called it a glitch on our part," since it isn't Sprint's policy to allow caching of a password.

consequences if they create applications to allow smart phone access to e-mail or corporate data and a password is

stolen. Pescatore said. "What if somebody steals your company's network password from a cell phone you

TORE, a se

#### e-mail access to employees. Correction: Security, Not

# Top IT Purchasing Decisions in 2000

The top 10 buying decisions IT managers will make this year

What do IT managers consider when investing in an enterprise database?

What do IT managers look for when choosing

a storage-area network?

What do IT managers look for when buying desktop placement sys

# STORAGE NETWORKING WORLD

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# STORAGE VORLD



# Firms Test App Components via Web

Amid the rush to quickly develop and tect structural design flaws in applica-

deploy applications for the Web, ven-dors that sell application components

Components are portions of an application that perform specific functions within the application, such as populat-

ing a form with data. Even though individual components may work fine, they can slow or stop an application if they are combined improperly

Component-based programming is like building a house of cards: Pull out or add the wrong object, and the whole structure could come tumbling down, says Tracy Corbo, an analyst at Hurwitz Group Inc., a Framingham, Mass.-based consulting and research firm.

#### Testing Adds Credibility

"Selling components on the Web is relatively easy, but there is more that can be done there," explained Corbo. Testing is very important for a user's comfort level with using components. It adds an element of credibility for the

The most important aspect of building component-based applications doesn't involve programming at all, said Corbo, who recommended performing more up-front testing of source code and documenting of the application

specification. The pitfall of application developmeet programming for the Web is that many developers have not gone back to the basics in application design," Corbo added.

To meet the demands of developers. several online component brokers have expanded their service offerings to include design analysis, tests of code structure and individual component performance and tests of the component's performance as part of the over-

Cleveland-based component vendor SNAPSHOT

#### ASP Forecast

Worldwide spending on applicati service providers (ASP) will increase to \$8 billion by 2004.

■ The maturity of ASP offerings, higher customer awareness, endorsements by influential players and an increase in customer acquisition and collaborative segments, including groupware, document management, e-mail and personal applications. will sour ASP spending.

1999 \$296M 2004 \$7.8B

#### Web-Based

#### Component Testing Guidelines to follow:

· Start with a good design and overall planning

m Perform load testing to find out if the component can handle the right level of concurrent users

■ Use code structure analysis to help determine whether the code will break

Flashline.com Inc. recently began offering online quality assurance testing to developers using testing tools from KL Group Inc. in Toronto and Metamata Inc. in Fremont, Calif. Tests start at \$50.

Flashline customer Supert Shah chief technology officer at Diamelle Inc., an information services and luxury goods company based in Cortlands Manor, NY, operates two Web sites: www.travelesque.com, for leisure travel reservations, and www.diamelle.com, a diamond and iewelry yendor.

#### **Fast Bevelopment**

Using Enterprise Java Beans (FIR) Shah and his team of five developers built travelesque.com in less than three months. For example, Shah said they used prebuilt EJBs for catalog, search and navigation functionality, cutting the coding task down to writing four or fives lines of reference code to link each component with the lava Native Directory Interface.

"We're using relatively inexpensive PCs - off-the-shelf stuff like Intel machines running Windows NT and SQL server oo [the] back end - and [we] wanted to handle very high volume," said Shah. "By doing the load test and quality assurance online, it belos us to maximize performance" on that infra-

Innet Absher, enterprise applications team leader at the U.S. Bureau of the Census in Washington, said she plans to use workflow components to develop collaborative, administrative Notes/ Domino applications to handle pro curements, asset investory and budget models. She explained that this step was necessary because this year's census crunch has put her team under more pressure to ensure quality while cutting development time

We have a lab environment and full testing capabilities on the development server, it simulates everything, like code looping and populating data." Absher said. However, she said her team would welcome external testing services to improve the performance of applications developed in-house.

We'll let someone else do the testing, theo run the code through some of the paces on our own," Absher said. "We're new to this ... and are interested in picking up tools and tricks from other folks."

# BRIEFS

#### Caleb Technology Releases Monster Floory

Caleb Technology Corp. has rolled out Mon-ster Plappy, a high-capacity drive that stores, reads and retrieves up to 144MB of date. The drive is backward compatible, allowing data flies, utilities and applications to be trans-terred from older disks to Moneter Ploppy, it's dable in packs of five disks for \$34,99.

Based in Boulder, Colo., Caleb provides high capacity Roppy-disk drives and media www.calebmedia.com

#### Be Inc. Opens Up Operating System Source Code

Be Inc. last week arrecurced the latest ye Be lot. last week announced the larger ver-sion of its digital mode operating system, BeOS 5.0. The Personal Edition of the operat-ing system will be assistable at no charge via the Web at http://free be.com. in addition, the BeOS 5.0 Pro Edition, a full-featured version pred for media professionals, has been made available to third-party publishers in Horth and South America and Asia; availab ty in Europe is soon to follow.

In conjunction with the release of BeOS 5.0, the company has announced that it will offer free access to its source code. The BeOS user interface known as Tracker (the desicte is available at www.opentracter.org, and the source code for the Deekber (the tack bar) is available at some opendeather.org. BeOS 5.0 Pro Edition will be available

through Gobs Software Inc. in the Americas and through Hitachi Ltd. in Asia. It's expected to be available in Europe through Koch Media www.he.com

#### Sprint PCS Offers Dictionary.com for Wireless

Sprint PCS Group in Kenses City, Mo., last week announced the availability of Lexico LLC's Dictionary.com Web site on Sprint PCS wireless internet phones. The site offers defi-nitions of 135,000 words and translates cortain words and phrases into several lan-guages. Access to Dictionary.com is available at no charge to Sprint PCS users who pay a flat monthly fee for the general Web service. http://csg.sprint.com/pcs

#### Procom Launches NetForce 1500 Data Server

unched NetForce 1500, a midrange data server appliance designed to address the stor-age requirements of electronic luminosses. and corporate workgroups. Offering up to 3600B of cross-platform storage capacity Helferce 1500 is a multiprotocol server app

ance that provides cross-platform file sharin and file locking on both the Network File Sys tern and Common internet File System. Net-Ferce 1500 allows servers to share a comm storage repository, eliminating the need to

The product supports security and remote authentication under both Windows and Unix rements and is available in deck-side and rack-mount configurations. Pricing for NetForce 1500 ranges from \$22,000 to \$50,000, depending on the co

## Veritas to Launch Two New Storage Products

te Storage for Microsoft Exchange, a rage management application that naivi-zes storage space on Microsoft Corp.'s Ex change servers. Remote Storage auto ly moves a mail message attachments from the Exchange database onto a secondary storage device such as a tape drive or library. The Mountain View, Calif.-based company has also developed Bata Analyzer for Ex-change, a tool that was designed to determ how much of a user's Exchange database

Remote Storage and Data Analyzer are both acheduled to ship in the second quarter. Remote Storage will cost \$4,995. Pricing in-formation wasn't available for Data Analyzer.

#### IBM Agrees to Resell McData Products

IBM last week announced a reseller agree-ment under which IBM will resell McData's ED-5000 Enterprise Fibre Channel Director and management software as part of its En-terprise Storage Area Network. www.IBM.com/SAN

#### Imperial Upgrades Solid-State Disk Capacity

checkey inc. has boosted the ca pacity of its 3.5-in. Megalitam-35 solid-state disk. It can be configured to hold 2.168 of nonvolatile storage and 4.268 of volatile stor age. According to the El Segundo, Calif.-based developer of solid-state disks and cache systems, the norvolatile disk includes an internal disk and battery unit, which writ data to a backup disk through a battery whe stored, it transfers data back from the disk

# Sun Expands Its Remote

within Sun Remote Services 2.0, a solte of mote management services. Sen Remote S. Management Services

Son Microystome products are now supported

Army lines. Pricing want's multiplies.



# Ditching Modems, **Punting on Policy**

Week 4: Pat lines up political support for a shift to modem pooling and proposes strict password process

AVE YOU EVER noticed that people are gung-ho about your new job and give you tons of "attaoys," until you begin to make policy? Then their attitudes dard that wasn't there before.

change, and they seem to think, "He was so cool when he was just a network admin." I think the honey-

We have more than 120 modems on our campus. and I have set a deadline of May I to repeace all of them with Shiva dial-out modem pools from Intel Network Systems Inc. in Bedford. Mass., formerly Shiva Corp. This will reduce our exposure to war dialers and the biggest back door to our ork, since all outgoing modem connections will poss through a single access point, which we can more easily secure.

#### Don't Take My Modern

To begin, I drafted an e-mail to the information technology department, which includes a staff of 70 full-time programmers, notifying them that they would be the first to receive the modem-pooling software. I chose the Shiva Dial-Out Chooser, which uses the dialout features of our LanRover DS6 dial-

up access switch. Well, almost immediately, e-mails started to flood in from the programmers, who said they wanted to run tests to make sure all of their applications would work on the new modem pools. One of their favorite applications is Symantec Corn's ncAnywhere, which is a notorious back door because it's designed to make it easier for outsiders to dial in to systems and control them remotely — which, of course, makes it easier for hackers to do the same thing. I sent the programmers a note ex-plaining that because the help desk was doing the conversion for us and they don't want to make two trips to each workstation, the programmers' modems uld be removed and the analog lines

disconnected at the same time that the

new modem pool software was in stalled. The e-mails continued to fly. My boss advised me to just ignore them. I must say that he's behind me 100%, and that helps in creating a stan

#### Punting on Passwords Moving oo to anoth-

security flasco, it appears that our corporate pass-word policy is to force passwords to be at least eight characters lone and changed every 90 days. But it also appears that the higher you are in the compagy and the more access Security you have to critical data, the less restrictive the password policy is. For the Manager's hig bosses, there is no expiration period and only a Journal four-character length requirement. I believe this

began when a bigwig in our company managed to get a shorter password that never expires. I decided to call a meeting with my boss, since he's been with the company two years longer than I, to discuss the challenges of changing the password policy. He reminded me that if I change the expiration period to 45 days from 90, the help desk is going to get hammered. More than 500 passwords

would expire immediately. We also discussed the fact that enforcing a polialphanumeric symbols — not just numbers in front of or behind whole words - is going to be extremely hard. I've tabled the issue, for now.

#### First, Ask the Lauvers

Next stop was our legal department, to see what I can do to begin implementing corporate policies regarding

The first subject was a release document for our network topography playbook, a hinder that will have our entire network diagrammed both physically and logically. It will even include emergency contact numbers so we can be reached in the middle of the night to cut the response time to any event. The want to protect. The legal department and I drafted a document specifying how people must protect this data that I will post later this month when it's approved. The book will be distributed to only II people. We want those people to take the security of this information

The next topic was how to develop a complete set of security policies. I found a great set of sample policies at the Web site for the SANS Institute. It covers almost every policy aspect that we need in our company. The legal department loved it because it gives our company a head start in what needs

#### to be covered. mas of the Week

The last meeting of the week was with Network Associates Inc. (NAI) to see a demonstration of CyberCop. a full intrusion-detection system. Just to refresh your memory. I was trying to install Internet Security System Inc.'s (ISS) RealSecure and Network Ice Corp.'s IcePac suite in our lab to test an intrusion-detection system for our internal network

I found The Network Ice product difficult to install and to use, with a cumbersome Web interface console. I really like it as an intrusion-detection system for the home user, but not for an enterprise. RealSecure is also difficult to install. I invested two days in the lab and still haven't figured it out. And I can't make the time to read the five

I was impressed by NAI's CyberCop product demo. It appeared to be very easy to use and configure out of the box because it takes advantage of the Microsoft Management Console (MMC). I will wait and see whether that remains true when I get the product to test on my network.

Then there's the cost, NAI pro great stuff, and the pricing is in line with that of other vendors - maybe even a little less. The quote we got for 50 units was around \$10,000, including two years of support

Next week, I will be in the ISS-sponsored Check Point Software Technol gies Ltd. Firewall-I class for four days. I'm looking forward to it because I need to learn about the virtual private network (VPN) and secure remote/client nince of the software I have 25 Microsoft Exchange sites I need to connect to

## THISWFFK'SALOSSARY

access to a program or online service

· Firewall: A system or combination of systems that enforces a boundary between two or more networks. The typical firewall is an inexpensive PC running a vortant of Unit

Microsoft Management Console (MMC): The software worder's framewo

Medem-pooling software: Multiple nodems serving dial-in or dial-out needs none location, chausis or unit.

communications network that provides what seems like dedicated lines over what are, in fact, shared lines. This allows a povate network to be configured within a public network for greater security

 War dialors: Software used to rapidly dai numbers to find live moderns that will allow a connection to be made in order to se a settem or network

p: Network Associates' Covert

our corporate headquarters, and static IP addresses are becoming extremely hard to get outside of the U.S. We're hoping that establishing a VPN will ease that challenge for us.

This journal is written by a real security engineer, whose name and employer have been disguised for obvious reasons. It is posted weekly at www. computer world.com and at www.sans.org to help you and our security manager - let's call him Pat - better solve your security problems. Contact him with comments or advice at pat\_rabbinski@hushmail.com with the subject line Pat's Journal.

crosoft Windows has accus-

tomed us to and whether there

is any reason to consider using

it as a desktop operating sys-

tem in preference to Windows.

there's no need for an ordinar-

user to be afraid of the graph

cal shells on Linux - or at least

not the KDE shell that I tried

I'll try some others in the com-

ing months. But it seems pretty

clear that if you can find the an

plication you need. Corel Linux

works, and looks, pretty much

Should information technol

Point 2001, a mapping program

that has a lot of intriguing and

like Windows.

My first conclusion is that

# Linux Lives, **Microsoft Maps**

A Linux installation without pain, and a Microsoft product that shines. Will wonders never cease? By Russell Kay

> about Linux for a long time, and I've actually received a number of copies of it from various distributors during the past several years. But how it pever made it to the top of my project pile. Last weekend, I took the lunge. I decided to attempt to install Linux on the second hard disk on my home machine. I had three Linux versions on hand - including Mandrake 7.0 from Mandrake-Soft Inc. in Altadena, Calif., and TurboLinux Workstation 5.0 from TurboLinux Inc. in Brisbane, Calif. - but I opted to try Corel Linux Deluxe. I chose the version from Corel Corp. in Ottawa for two reasons: First, it came with a Lin-

ux version of WordPerfect, an

used for years; and second, I figured that an applications company might have paid more attention to installation

I started the install process fairly early oo a day that I'd left pretty open, prepared for delays by all the horror stories I'd read. Except for an unrelated hardware issue that stemmed from a mixed SCSI-EIDE hard disk environment, the installation went smoothly. I waited niously for the system to lock up or ask me for some obscure technical inform about system components that I wouldn't be able to supply Didn't happen, It installed, i booted up, it ran. The graphi cal K Desktop Enviror

(KDE) that was installed in

fairly similar to the Windows

graphical user interface, and I | different it is from what Mi was able to navigate it and start up installed applications, inand an image-editing program,

opening the manual. Overall, I was impressed installed just about every verwell as several versions of Mac OS, and this Linux was smoother than most of those Only in a few places did some of the raw underpinnings show through. When I used the file manager, I was greeted with the typical Unix directory structure - /usr/bin/ and the

like. But I found that I could avoid facing even that if I stored my documents and applications in the "My Home" folder, which is accessed via a desktop icon, just like the Windows "My Documents" folder. Although I installed Linux into its owo Linux-formatted disk partition, WordPerfect

documents created with Windows, which were stored on FAT32 partitions. Round I goes to Linux. The urprises, so far, have all been pleasant, and now I can begin to explore this new-to-me operating system with an eye to its usability. (I already know or at least expect - that it's going to be more stable and

client, trying to determ

how good it is, how strange or

was still able to read all my

powerful database capabilitier and integraces well with the Microsoft Office suite. In addi tion to street-level maps of the U.S. and Canada (a European version will be available soo the program has multisou demographic and census data, down to individual ZIP codes. This isn't a full-flederd end graphic information system (GIS), but in some ways it's crash-proof than any of my current versions of Windows,) I'm looking at Linux not as a server platform but as an end-

better and easier to use. With MapPoint, you can drag a high hted area of a spreadsheet representing, say, sales in various states during a certain period - and drop it onto a mag of the U.S. It asks what style of representation you'd like and then creates a map that shows the data graphically. You can also use data directly from Access and Outlook.

You can give MapPoint 2001 a list of addresses and have it plot the most efficient route to travel to all of them - and you can customize the routing to take into account time-of-day travel factors. You can also cre ate customized maps for downloading onto a pock PC's Pocket Streets program

I've used GIS application and several other mapping pr grams. While they've all b promised, I've never found one that was easier to use or or that I like better, 8

cluding Netscape Navigator without fuss and without even

with how simply it went. I've sion of Windows, from 3.0 oo up to 2000 Advanced Server, as

ogy management think about using Linux as a desktop operating system? That's an intrinu ing question, but I'm spine to let it hang in the air for a while here Do You Want to Go Today? Microsoft Corp. keeps as ing us that question in its ads and now it has supplied a first rate package that can help us answer it. The product is Man

is the ability to start at any giv

# Cache Memory

WHE MEMORY IS all about speed and efficiency. It's a clever technique to- help a computer processor work more smoothly. You can think of memory as being organized a little like your office. Small amounts of frequently used information, such as the departmental phone list, are put on the bulletin board above your desk. Similarly, you keep information on your current enviects close at hand Less frequently used information, say the city phone directory, sits on the bookshelf next to your desk. Rarely used information

BY GARY H. ANTHES

is in a filing cabinet Computers store data using a similar hierarchy. When arplications start, data and instructions are moved from the slow hard disk into main memory (dynamic RAM, or DRAM), where the CPU can get them more quickly. DRAM acts as a cache for the disk

#### Levels Upon Levels Although DRAM is fisher

than the disk, it's still pokey. So data that's needed more often is moved up to the next faster memory, called the Level 2 (12) eache. This may be located on a separate, high-speed static RAM chip next to the CPU, but new CPUs usually incorporate the 12 cache di reetly on the processor chip. At the highest level, the most

frequently used information say the instructions in a loon which execute repeatedly - is stored directly on a special section of the processor chip. called Level I (I I) eache. This is the fastest memory of all. Intel Corp.'s Pentium III processor has 32KB of LI cache on the processor chip and ei-

ther 256KB of L2 on-chip or 512KB of L2 off-chip. The 1.2 cache on the CPU chip can be severand four times factor than if it were on a separate chip. When the processor needs

to execute an instruction, it looks first in its own data regisCache memory is high-speed random access memory used by a computer processor for temporary storage of information. It boosts performance

by keeping the most frequently used data and instructions physically close to the processor, where they can be retrieved more quickly.

#### Where's My Data?

When the CPU needs data, it first looks in its men data registers. If the data isn't there, the CPU looks to see if it's in the nearby Level I cache. If that fails, it's off to the Level 2 eache. If it's numbers in eache, the CPU looks in main memory. Not there? The CPU gets at from disk All the while, the clock is tacking, and the CPU is sitting

ters. If the needed data isn't there, it eyes to the 11 cache and then to the L2 cache. If the data isn't in any cache, the CPU calls out to the main RAM. It might not even be there, in which case the system has to retrieve it from the disk. When the CPU finds data in one of its cache locations, it's

called a "hit": failure to find it is a "miss." Every miss introduces a delay, or latency, as the processor tries a slower level. In a well-designed system with software algorithms that enfetch data before it's requested. the hit returns out h 1994.

For high-end processors, it can take from one to three clock eyeles to fetch informs tion from LL while the CPU waits and does nothing. It takes six to 12 cycles to get data from an 12 on the processor chip. and dezens or even hundreds of exclosion for afficients 2 Caches are more important

in servers than in desktop PCs because servers have so much traffic between processor and memory penerated by elient transactions, Intel turned a 90-MHz, 80486-based PC into a server in 1991 by adding a 50-MHz eache to the processor chip. Although the bus connecting processor and memory ran only at 25 MHz, this cache let many programs run entirely within the 480 chip at 50 MHz. This hierarchical arrangement of memory helps bridge a

widening gap between processor speeds, which are increasing at roughly 50% per year. and DRAM access rates, which are climbing at only 5% per

year. As this performance mis match grows, hardware makers will add a third and possibly fourth level of cache memory says John Shen, a professor of electrical and commuter envineering at Carnegie Mellon University in Pittsburgh.

Indeed, later this year, Intel will introduce Level 3 (L3) cache in its 64-bit server processors, called Itanium. The 2MB or 4MB cache will connect to the processor over a bus that runs as fast as the processor - 800 MHz IBM is also developing its

own 1.3 cache for 32- and 64-bit Intel-based Netfinity servers At first, it will be placed on the memory controller chip and will be available toward the end of next year, says Tom Bradicich, director of Netfinity

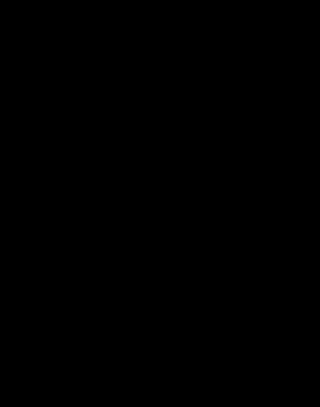
architecture and technology IBM's L3 will be a system level cache available to the server's four to 16 processors. Intel's L3 can help only the processor to which it's at tached, but IBM says its 1.3 can improve throughout for the whole system. Bradicich says IBM's 1,3 also will aid high availability computing for e-commerce by enabling main memory swap-outs and up-

#### grades as the system is running. oper Isn't Necessarily Better

The frequency of each misses can be reduced by makine caches bigger. But big caches draw a lot of power penerate a lot of heat and reduce the yield of good chips in manufacturing Shen says.

One way around these diffi culties may be to move the cache-management logic from hardware to software. The compiler could potentially analyze program behavior and penerate instructions to move data up and down the memory hierarchy," Shen says

Software-managed caches are currently confined to nesearch labs. Potential obstacles include the need to rewrite compilers and recompile le gney code for every new CPU generation. Shen says. 0



# **TECHNOLOGY**QUICKSTUDY

# Cache Memory

ACHE MEMORY IS all about speed and efficiency. It's a clever technique to help a computer processor work more hly. You can think of memory as being organized a little like your office. Small ants of frequently used information, such as the departmental phone list, are put oo the bulletin board above your desk. Similarly, you keep information on your current projects close at hand. Less freently used information, say the city phone directory, sits on the bookshelf next to your desk. Rarely used information

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Intel Corp.5 Pentium III

Processor has SNR of L1 cache
on the processor chip and either 256KB of L2 on-chip or
SIZKB of L2 off-chip. The L2
cache on the CPU chip can be
accessed four times faster than
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When the processor needs

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DEFINITION

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CPU

TOPIC

TOPI

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When the CPU finds data in one of its cache locations, it's called a "hit"; failure to find it is a "miss." Every miss introduces a delay or latency, as the processor tries a slower level. In a well-designed system with software algorithms that pre-fetch data before it's requested, the hit rate can reach 90%. For high-end processors, it

For high-end processors, it can take from one to three clock cycles to fetch information from L1, while the CPU waits and does nothing, It takes six to 12 cycles to get data from an L2 on the processor chip, and dozens or even hundreds of cycles for off-CPU L2. Caches are more important

Caches are more important in servers than in desktop PCs because servers have so much traffic between processor and memory generated by client transactions. Intel turner a 50 MHz. 80486-based PC into 'a server in 1991 by adding a 50-MHz cache to the processor chip. Although the bus connecting processor and memory ran only at 25 MHz, this cache tel many programs une netirity tel many programs une netired.

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nect to the processor over a bas that runs as fast as the processor—800 MHz. IBM is also developing its own L3 cache for 32-and 64-bit Intel-based Netfinity servers. At first, it will be placed on the memory controller chip and will be available toward the end of next year, says Tom

2MB or 4MB cache will con-

Bradicisk, director of Nerflatiy architecture and technology. IBMS 13 will be a systemlevel cache available to the sever's four to 16 processors. Intel's 13 can help only the processor to which it's attached, but IBM says int 13 can improve throughput for the whole system. Bradicish says IBM's 13 also will ad highavailability computing for availability computing for availability computing the examination of the second of the examination of the second of the examination of the second of the second control of the second of the second control of the second of the sec

Bigger Ian't Mocessarily Better
The frequency of cache
misses can be reduced by making caches bigger. But big
caches draw a lot of power,
generate a lot of heat and reduce the yield of good chips in
manufacturing, Shen says.

One way around these difficulties may be to move the cache-management logic from hardware to software. "The compiler could potentially analyze program behavior and generate instructions to move data up and down the memory

hierarchy, Shen says.
Software-maoaged caches
are currently confined to research labs. Potential obstacles
include the need to rewrite
compilers and recompile legacy code for every new CPU
semeration. Shen says.



19 out of 20 Web sites can't tell them apart. Can yours?

# DO YOU KNOW

DO YOU KNOW DO YOU KNOW



The company is stronger after a high-profile CEO change, but it still faces uncertainties, according to users and analysts. By Matt Hamblen

OMPAO COMPUTER Corp. has successfully ered the storm of the past year, but some gray skies still linger for the \$40 billion computer giant, according to a new Computerworld poll and interviews

with users and analysts. Since the ouster of CEO Eckhard Pfeiffer a year ago and the installation

of Michael Capellas as Pfeiffer's re placement last July, Houston-based Compaq has clearly become a stronger company that provides excellent services, PCs and high-end servers, polling results and interviews show

But users and industry analysts still have questions about Compaq's future Why can't Compaq's stock price climb above the low \$30s? How will it distinguish itself from tough competitors such as Dell Computer Corp. in Round Rock, Texas? High-end users wonder about Compaq's devotion to the Alpha server platform and VMS operating system, adopted after its June 1998 acquisition of Digital Equipment Corn

in Maynard, Mass. And some users even say that some of Compaq's bright spots, like the new iPaq desktop PC or its move to direct sales, have been dimmed by the company's inability to clearly communicate

their value to customers.

These signs of softness were found in last month's Computerworld survey in which 151 current Compaq users were asked which Compaq products they use today in 10 categories and which ones they'll use in 12 months from the same categories. Overall, the number they say they'll use decreased

in eight out of 10 categories. That finding contrasts with a solid 69% who say Compaq understands the needs of enterprise customers, up from 53% in a January 1999 Computerworld poll. So while 69% of users surveyed say they have faith in the company, they also indicate that they expect to buy somewhat fewer Compaq products over time.

#### **Shaky Perceptions**

\*Tm more positive on Compaq's overall prospects than I was a year ago, but I'm not pounding the table on them," says Charles R. Wolf, a finance analyst at UBS Warburg in New York who rates the Compaq stock a less-

than-optimistic Hold by many users in the poll. "A year from now, I'll probably be just as hig a Compaq user as I am now, but I say 'proba hly' as long as they don't do anything

shaky," says Scott Thomas, manager of systems and programming at Alcan Aluminum Corp. in Terre Haute, Ind.

Alcan just purchased three Alpha servers from Compaq and is happy with the products and service for them. But Thomas says he was shocked when Compan said last August it uldn't support Win dows NT on its Alpha line, and he wonders what that will mean.

"We watch them care fully, and if they (Compaq] trend to extinction

that will affect the prod-



ucts we buy," he adds. "I'd like some more backing for the VMS environment and some reassurances. Their product is OK, but the business end of Compaq seems shaky, and customers leave companies for that reason,"

#### Threat From Dell

Some customers say Compaq is also failing to show the mony of Dell, especially in competing for their business.

"We bought Dell servers last November, even though we were interested in Compaq," says Paul Kirk, senior vice president of MIS at United Compunies.

Financial Corp. in Baton Rouge, La.

"We asked for quotes from both, and
Dell came in and stomped Compaq."
Kirk says, adding that he didn't understand why Compaq wouldn't compete
on price.

Several analysts say Dell sales teams swooped in last year to grab Compaq enterprise business accounts when Compaq was in disarray, but the trend

seems to have slowed.

Still, customer satisfication ratings
from September through february were
higher for Dell than for Compaq or IBM
according to Computerworld's BrandTrack research — a survey of customer
loyally and satisfaction that is sent to
thousands of IT buyers each month.

Over the past year, BrandTirack found that more customers planned to stick with their Dell desktops, PC servers and notebooks than did Compaq customers.

Roger Kny, an analyst at International Data Corp. in Framingham, Mass, says IDC's surveys have shown similar says IDC's surveys have shown similar

softness for Compaq. "In terms of brand loyalty, Dell is clearly above the others," he says. In reaction, Compaq spokesman Alan Hodel says Compaq still sells more PCs than any vendor, adding that half of Compaq's revenue comes from enterprise servers and services that have nothing to do with PCs. Compaq's report for fourth-quarter 1999 showed \$332 million in profits on \$10.5 billion in revenue, a decrease of 4% over the same quarter in 1998, but higher than

# analysts' expectations. Pag innovation

The new iBap PC, which Compas, started shipping in January, could help in the deskip belief with Dell and in the deskip belief with Dell and other large starts at \$699 and The small, stylinh iPaq starts at \$699 and Fer instances that allow easy Universal Seri features that allow easy Universal Seri features that allow easy Universal Seri features which will be the common time of the start of the common time. The start of the start of the common times are significant to the common times.

When the iPaq was announced, Compaş aid the project took half the normal design-to-production time, a sign to industry observers that Capellas was solidly in charge. The product is being initiated by IBM and Hewlett-Backard Co., but iPaq was the first on the street, and analysts say Compage can sell \$1 billion worth of iPaqs by the end of this year — although several analysts say they've had trouble gauging early saying says they've had trouble gauging early saying says they we had the saying says they we had the saying s

Reviewers raved when the product was released, yet Kay says he suspects it hasn't caught on as fast as Compaq had hoped. "My sense is that sales aren't doing overwhelmingly well because Compaq's not crowing about it anymore," Kay says.

t anymore," Kay says.

Compaq wouldn't discuss sales or other financial data because of the Continued on page 66

47

We bought Dell servers last November, even though we were interested in Compaq. We asked for quotes from both, and Dell came in and stomped Compaq.

PAUL KIRK (PICTURED). SENIOR VICE PRESIDENT OF MIS. UNITED COMPANIES FINANCIAL CORP.

ATER

# COMPAQ One year Later

Continued from none 65

quarterly report silent period required by the Securities and Exchange Commission as a guard against insider trading. Users widely praised the iPaq con-

cept in interviews, but they were also confused about its functions and its future evolution.

The iltaq TV commercial is too vague, but if looks like a real small box, "which would be an advantage for crowded desks, says Terry Arnold, business systems and support manager at Alliant Energy Corp, in Dubuque, loow. Arnold says he wants to bear from Compaq how far the ilPaq or another Compaq machine will go down

another Compaq machine will go down the path toward becoming a true thin client — a desktop device that functions like a terminal on a network.

**Direct Distribution Dilemma** 

The iPaq is being sold directly to customers as part of Compaq's major initiative to build a direct sales model. It has a goal of 40% of direct sales by year's end, an increase from the current level of about 19%.

A few medium-size businesses say they worry the direct model wun't serve their needs, because they aren't able to command Compaq's attention the way

the largest customers do. "We've recently had trouble acquiring [Compa) products quickly, and if you don't have good turnaround, what's the point of going direct?" says Mark Gerry, manager in MIS at Tony's

Fine Foods in West Steraments, Calif. Geery says his company tried to buy 30 laptops from Compag but couldn't pet them soon coungly for reasons that weren't explained. So instead, it bought laptops from San Diego-board Gateway. Inc. Moreover, he says he was frustrated when he ordered a Compag docking station for his own laptog last September but didn't receive it until February.

Compaq didn't comment on the specific case, but a spokesman notes that Capellas has said Compaq will move quickly to advance the direct strategy through the recent acquisition of some assets at Omaha-based Ins.Com Corp. and creation of the Custom Edge subsidiary: Analysts say Custom Edge can help smooth out wrinkles in the transi-

tion affecting customers.

Direct sales will decrease distribution costs at Compaq by as much as 6%, reason enough to make the move, say analysts. Still, some customers suestion how they'd benefit, especially

question how they'd benefit, especially if they like the value-added reseller (VAR) they already use and know. Compaq will never go 100% direct, according in analysis, partly because it

can't completely shut off relationships with VARs. But Compaq needs the direct sales madel "foolly to regain the intimacy with cusmmers they've lost," says Kevin Knox, an analyst at Gartner see Group Inc. in Stamfood, Conn.

"Direct gives customers the opportunity in have one neck to strangle instead of several when there's a problem," adds analyst Lindy Lesperance at Technology Business Research Inc. in

Computerworld's survey shows that a majority of Compaq customers feel that the direct model is important to them. Of 37 respondents who have used it, a large majority say they're sai-

used it, a stripe majority say they re saiisfied (see chart at right).

The Compaq move to direct sales probably is a reaction to Dell's huge success with direct sales, which was evident in Dell's movement last year into the

top spot for PC unit sales in the U.S. Some of Compaq's customers are less concerned with the Dell threat than with Compaq's possible failure to deliver on the high end, however. Those cus-

ARNOLD: Looking
for a true this
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"The Digital integration is structurally in place, somewhere above 80% done, but Compaq should have come this far a year ago," Shannon says.

Even if the integration of the Tandem

division and Digital is mostly accomplished, only 40% of the users surveyed say they agree that Compaq is committed to supporting and enhancing technologies from the two companies. Uncertainties about Compaq's future

stem partly from the hypercompetitive market in which seemingly little things take on bigger meaning, whether Capellas visits enough big customers or gives a good speech for investors, or what the stock price did today, for example.

"Compaq has really tough competitors, so it's future isn't just a matter of performing well, it's a matter of performing really well," says UBS Warbure's Wolf, #

#### User Views of Compag

Surprised users for whom a direct value model in in

Company products surveyed by cases of Company products about their parceptions of Company, Users were also select which types of products they use now and whether they thought they would be usin Company products in the same conteguries 22 words from now. Survey results are assertanted below

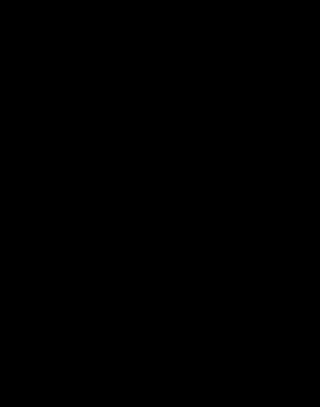
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Mothendrings: From March 3 to 8, Computerworld conflicted SS fallighore interviews to gather outstands when an Comput Computer Cost 1, performance for the past year. Computerworld residented from its scientistics file management, devictors and vocal providents of 15 in programations with 200 or more employees. Personalistics of the survey years required to be exceeded with

quantition had to have been a soon of Company products or survices for at least one year.



# COMPAQ ONE YEAR LATER

Continued from page 65

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— The digital bookstore of the future. When her the lett if melemon books assables continue insteady find the digital book and the answer you need. Early build your personal digital bookster? It will always be them for you— when you good like.

First, we had glass-house mainframes, then distributed workgroup servers. Now we've combined the headaches of both into centrally managed server farms. By Barry Nance

> computing was to make massive, monolithic data centers obsolete. Unfortunately, as companies distributed workgroup servers and the management of them - across the organization, they uncovered a pent-up need for both computing power and storage capacity far beyond what anyone had envisioned for small to midrange servers to handle. After a dramatic increase in the number of servers and the corresponding management workload, many enterprises are in the process of reclaiming server management as a centrally administered function. Some have even moved the servers to a central location, but most use network-based tools to remotely administer the many servers

animater lat num's servers. Companies with centrally managed server farms tend their fields of file, database, Web and application processors using very lodividual, carefully carfed approaches. These approaches combine a diverse set of commercially available tools with a smattering of custom-programmed workflow automation. The software tools are different and the user Interfaces are graphical, but the server administrator's management chores are essentially the same as those that a mainframe administrator performs. The key difference is the greater number of machines that the server administrator has to keep running.

Many companies were generally relocates to talk shout their server from management techniques and took, fearing that describing the server environment and management procedures and would divulge important internal company structures and competitive basiness strategies. Fortunately, we long as few TP professionals who were willing to share their server management experiences.

experiences that four companies have had with multiple-server management. They show that the right mix of tools and procedures is different for different organizations, but that having the right tools and expertise in using those tools is universally important.

toots is universally important.

As James Governor, an analyst at Illuminata Inc., said: "As IT tries to keep
pace with the exponentially increasing
need for computing power will undoubtedthat computing power will undoubtedby fare better than those that doe't."







#### ORIGIN: A PLACE TO START

Organization: Origin Technology in Business Inc. (a subsidiary of Philips Electronics NV) in Dallas, the Netherlands and Singapore

www.origin-it.com
Assignment: Provide global outsourcing
services to enterprises

Services to enterprises
Servers: Many different kinds of Unix
and Windows NT servers
Software: Austin, Texas-hased Tivoli

Systems Inc.'s Enterprise suite of tools Staff size: More than 60 employees, located at seven sites worldwide Land: Keith Pelphrey, global director. Enterprise Management Systems

Origin manages 22 huge server farms for Philips and for hundreds of outsourcing clients with hundreds of thousands of users in 31 countries.

The company's data centers house nearly 60 mainframes and about 3,000 midrange servers. These servers are a mixture of about 1,800 machines, including IBM's AIX and OS/400, Sun Microsystems Inc.'s Solaris, Hewlett-Packard Co.'s HP-UX and Madison, Wis-based DEC International Inc.'s Unix. There are also about 1,200 machines running Windows NT and Net-Ware. More than 400 of the computers are Lotus Notes servers; many others are file, print and database servers; and the remainder are application-specific processors for enterprise resource planning and other vertical-market systems

Global Director Keith Pelphrey and Inboratory manager Mark Eimer at Origin's Enterprise Management Systems (EMS) branch explain how they've achieved this remarkable level of efficiency and productivity. "We work hard to make sure the computing environment is consistent and up-to-date, and we abbree to stringent standard, and the standard or the sta

dards — that we created for ourselves — for how we run our servers,\* Pelphrey says.

Eimer says EMS presents challenges that leave his staff basy. According to Pelphrey, businesses that have trouble maintaining a consistent, standard environment are good candidates for be-

coming outsourcing customers. Pelphry adds that Origin prefers to use Troll Systems' Enterprise suite to manage maltiple servers, although the company doesn't abandon a customers' existing procedures and tools. To a lesser extent, Origin also uses Univerter TNG from Computer Associates International Inc. in Islandin, NY, and OpenYiew from EP

Origin centrally controls the server management software from its mainframe compoters, using Origin-writen programs. The company also uses IBM's Net/New and Net/Score Manager (Hest to help keep the server's network connections healthy. For the server in servery connections healthy. For fine user THOM Sorigar Martines (For the Starty and Sorigar Martines (For the Starty and Sorigar Martines (For the Starty Software from Legan Systems Inc. in Park ANC Calif. Arciver from Seaguer Technology Inc. in Scotts Valley. Calif. and Onmalise (from HP. Jobol Polyhey and Elmer say they emposition with Onter severer farm empositions with Onter severer farm empositions with Onter severer farm

Both respirey and Eimer say they empathize with other sever farm managers. "People underestimate the complexity of EuKs products." Eimer says. "To thake an EMS tool do what you want, you need to invest signifucantly in the training of the people who will live with the tools."

LET YOUR SERVERS DO THE WALKING Organization: Bell Atlantic Yellow Pages

Inc. in Boston www.bigyellow.com Assignment: Publish Yellow Pages

Assignment: Publish Yellow Pages directories, in print and on the Web Continued on page 70

# the & Farm

Continued from page 69 Servers: Compaq Computer Corp. servers running Windows NT. plus IBM, HP and Sun Microsystems

vers running Unix Software: Compaq Insite Manager: Microsoft Corp.'s Systems Management Server (SMS); Tivoli Expert Advisor; Adkins Resource Inc.'s Hyena: Wise Solutions Inc.'s Wise installer; and Seagate Software ArcServe 6.6 Staff Size: Five

Lood: John Farrer, Windows NT Server

Bell Atlantic Corp.'s Yellow Pages subsidiary manages close to 200 servers, scattered from Maine to West Virginia in 50 divisional offices and six data centers. Most of the machines are Compaq Proliant servers running Windows NT. but about 20 run AIX. Solaris and HP-UX. There's also an MVS mainframe in the mix. The servers support about 5,000 end users. all in a single Windows NT domain regulated by one Primary Domain Controller, Microsoft's RAS runs on two servers to provide 150 ports of dial-in connectivity.

The publishing company's mainsta pplications are Microsoft Word and Excel productivity tools; Microsoft BackOffice database and connectivity tools: Notes for e-mail: software from PeopleSoft Inc. in Pleasanton, Calif: QuarkXPress from Quark Inc. in Denver, for page layout: and a custom-written system for processing Yellow Pages rtising arders.

John Farrer says his organization lly evaluated dozens of applica tions to come up with the best combination for his team. The group's criteria for server management tools inchuded sophisticated functionality, support for the company's predomi nant platforms, ease of use and an intu-

itive interface. Farrer says he relies on Microsoft SMS for systems management and software distribution. Expert Advisor from Tivoli automates the help desk. while Hyena, from La Vernia, Texasbased Adkins Resource, maintains user identifications, home directories and standard resource-sharing configurations for users. Canton, Mich.-based Wise Solutions Inc.'s Wise installation tool belps Farrer build new Windows NT Server machines that are correctly configured, and Seagate's ArcServe does the backup and restore data protection chores.

Farrer says he firmly believes in staying ahead of hardware failures. For example, each Intel-based server has two RAID disk controllers capable of falling over to the redundant network

adapters and power supplies. Farrer advises other server farm managers to "spend the extra money up front to get fault-resistant, redundant hardware. Buy the best eminment possible. You'll save money over the long term, because the cost of server downtime - such as an unavailable production system - is high. You'll also get longer life cycles with better hardware."

#### A SPORTING PROPOSITION

Organization: The Forzani Group Ltd. in Calgary, Alberta www.forzanieroup.com Assignment: Support the largest retailer of sporting goods in Canada Servers: Data General Corp.'s DG-UX. with Windows-based clients Software: HP OpenView, 3Com Corp.'s

Transcend; and Intel Corp's LanDesk Staff size: Three Last: Michael Flood, IT director

The Forzani Group is Canada's largest sporting goods retailer, with about 300 stores nationwide. The company is growing rapidly and expects to soon have hundreds of geographically dispersed DG-UX servers from West boro, Mass, based Data General, About 800 users will access the machines, which will be managed from the com-

pany's main office. The company's principal applications are a sophisticated sales system. a sales data-tracking and trend-analysis system and a business-to-business

electronic data interchange system. Three Forzani Group employees will manage the servers. However, the company says that number could change if some responsibilities are shifted between the help desk and network manacement teams

Michael Flood, who's orchestrating the server growth plan, describes it as an offensive strategy to deal with his expanding server farm. He says his goal is to smoothly integrate appropri-

ate new technologies as his group rolls out the servers and management tools Flood has identified obstacles he'll

need to overcome, such as Canada's geography, time zones and multiple native languages, as well as stores' different operating procedures and server upgrade paths. He says he also wants each store to be as fault-tolerant as possible insulated from server and

He's selected OpenView from HP. Transcend from 3Com in Santa Clara Calif., and LANDesk from Intel as his primary tools. He says he looked briefly at Tivoli's software but found it pricey and unable to handle NetWareto-Unix migrations. Legato software carries out the backun and restore

Flood says his encounters with software vendors have given him a healthu skepticism of salespeople's clair Doo't believe vendors when they tell you they can automate all man tasks for all servers," be says,

#### A LITTLE INSURANCE A LOT OF SUPPORT Ornanization: Financial Administrative Services Inc. (a subsidiary of Policy

Management Systems Corp.) in Wethersfield Conn. Assignment: Administer life insurance

products on behalf of major insurance Servery IRM ATX servers with New

Ware and Windows NT: clone machines from Compaq, Dell Computer Corp. and NEC Corp. Software: Novell Inc.'s NWAdmin: Microsoft User Manager for Domains; Syncsort Inc.'s Backup Express; and Novell's ZENWorks Staff size: Six

Lead: Scott Wiggin, network manager

Financial Administrative Services is a third-party administrator. The company subcontracts to life insurance companies that want to outsource the customer data maintenance and service functions associated with a particular kind of insurance, such as variable

The company has only a few dozen

#### Buy the best equipment possible. You'll save money over the long term.

JOHN FARRER, WIRGOWS HT BERYER MANAGER. BELL ATLANTIC YELLOW PAGES INC.

servers, accessed by about 700 users. However, there is a strain on the server ent team because of the diversity of application environments that Financial Administrative Services has to support as it assumes the identities and workloads of several insur

ance companies.

On behalf of those companies, Financial Administrative Services run NetWare: Windows NT: WinFrame. from Citrix Systems Inc. in Fort Laud erdale, Fla.; AIX; and Linux from Red Hat Inc. in Research Triangle Park,

N.C. The Linux machines act as file fer protocol servers, while the NT, WinFrame and AIX servers store customer insurance data and process transactions

Scott Wiggin says his biggest prob-lem was finding tape backup software that would work with all the compa ny's operating platforms. He decided on Backup Express but then had to get the vendor, Woodcliff Lake, N.I.-based Syncsort, to fix bugs in the product.

Wiggin says be isn't concerned that it takes six people to manage the servers, because much of their time is spent responding to requests to move data between operating environments - a task be hasn't found a way to completely automate.

Wiggin's group uses NWAdmin to administer a NetWare Novell Directory Services (NDS) tree, and Windows NT User Manager for Domains to administer Financial Administrator's two domains. He says he looked at Novell's NDS for NT products and concluded that it isn't capable enough for his group's purposes. Novell's ZENWorks

distributes computer programs and data files Like Origin's Pelphrey and Eimer, Wiggins says cross-training is essent for keeping servers up and running.

Nance, a software developer and consultant for 29 years, is the author of Introduction to Networking, 4th Edition (Que, 1997) and Client/Server LAN Programming (Que, 1994), Contact him at barryn@erolc.com.

# Server Managers vs. Data Center Admin

# THE DATA IN THIS PICTURE?

IT'S EAST, TREES ARE ALMOST 200 TERARITES OF SATA ON THE IRM
MASSTARD VISTAL TAPE SERVER, AND LIKE MASIC, YOU CAN BRIDGE THE DATA
TO A SECOND SYSTEM IN A REMOTE LOCATION. WITH ITS BUILT-IN
INTELLIGENCE, THE ISM MASSTAR VIRTUAL TAPE SERVER FROUES
LOSICAL VOLUME STACKING FOR WARE-100% TAPE GARTRIDGE
UTILIZATION— RESULTING IN REDUCED TAPE OFERATION COSTS
AND MORE TAPE DATA BUNGER ANTOMATED CONTROL.

AND MORE TAPE DATA UNDER AUTOMATED CONTROL.
LEARN MORE ABOUT THE FUTURE-READY IBM MAGITAR
VIRTUAL TAPE SERVER AT IBM.COM/STORAGE/MAGIC/VTS



18M business storage servers

## TECHNOLOGYEMERGING COMPANIES

# Special Delivery

Start-up Click2send.com guarantees timely delivery of massive data files

LOW OVERSEAS COR nections and a nosy neighbor led Duane Wadsworth straight to Click2send.com Inc., a start-up that's pushing to become the registered mail delivery service of the Internet. Circuit diagrams are the lingua franca of the semiconductor industry. They're also really, really big and swapped

among engineers like your aunt's Christmas fruitcake. That was Wadsworth's problem. His company, Wadsworth-Pacific Manufacturing Associates Inc. in Palo Alto Colif brokers manufacturing supplies between North American semiconductor manufacturers and their Japanese suppliers.

Wadsworth's buyers and sellers must see - and alter product specifications rapidly, and generally send these diagrams as e-mail attachments.

You can't always guarantee a reliable connection overseas. and some mail programs used in Asia have trouble receiving big attachments," says Wadsworth, the company president. One corrupted attachment and Wadsworth-Pacific could

There wasn't enough time to express-deliver disks containing large files, he adds. "Federal Express services in Japan are expensive and, with crossing the international dateline, can

take three or four days." Wadsworth says he griped about the situation to a neighbor who happened to work for Click2send.com. The neighbor

eed" him to try the service. "He just didn't let up," Wadsworth chuckles. "And now I thank him for it."

One to Many Delivery
The idea behind Sunnyvale. Calif-based Click2send.com's service is simple: Let cusners store large data files, such as graphics, large and nedia presentations once. then download those files for every recipient - and get a recriet to prove the files were

successfully delivered. Senders upload the files to the Click2send.com site only once, no matter how many times they're delivered, which can eliminate a lot of redundant network traffic. Files can be downloaded to authorized recipients as needed, and the sender receives a proof-of delivery notice. Click2send can

convert Windows Media audio

pabilities, notification messaeing for both sides of the trans complete - take a lot of work public-key infrastructure security into the system Storing lots of large files

vide broadcast presentations. The firm's delivery mechasms - which provide reliable, browser-neutral and idiorproof upload and download caaction, good security and the ability to automatically delete a file after the delivery period is on the back end. Click2send is still working on incorporating

and video files to streaming formeans massive storage man-

#### Click2send.com Inc.

mnyvale, Calif. 94089 phone: (408) 752-8400

Nets: www.click/band.com

The technology: Secure online Why it's worth watching: Click2send.com acts as a secure rollory and delivery service for

data, especially very large tiles such as multimedia, high-end graphics and conventations nam officers: Charleso ele Vaughn and David Knight

gust 1998: Company founded

Acril 1999: Free consumer erch 2000: B-to-B service

nelevane: 40

ment, East-West inc. Acord investors UP and EMC

Customers: Oplyy & Mather Worldwide, Wadaworth-Pacific and Moio Records Corp. Partners: ENC. Microsoft Corp. VenSign Inc., US West Inc., Com-

cast Corp. and Cisco Systems Inc. Red fings for IT: - Potential trouble distinguishing itself from competitors.

- Click2send's free service could hurt its business-to-business imore. And the success of free to-pay conversions has been fily . The company's B-to-B offering works best off the public net

works, on high-speed private no works that can guarantee performance. While these "private into nets" are increasingly popular

agement headaches; Click?send is a poster child for Hopkinton, Mass-based storagearea network (SAN) giant EMC Corp. The start-up has built a 22-terabyte SAN so far. "We can scale that in multi-

ples, and we're glad we did lit that way I," says Click2send cofounder David Knight, "We've grown much more rapidly than anyone predicted."

"Click2send has had a lot of positive evolution in the last six months, and their service really does what they promise," says Joyce Graff, an analyst at Gartner Group Inc. in Stamford. Conn. "I think they've set up a good infrastructure, and they're making all the right kinds of relationships."

#### Free vs. Pav

The company's co-founders, Knight and Charlene Steele Vaughn, have impressive pedigrees, says Graff. Knight helped deliver the very succeasful Retix and Isocor initial public offerings. Vaughn, who helped found Time Warner Interactive, has been operating in the online entertainment field

for several years Still, the murkiest part of the Click2send.com picture is the bottom line. Vaughn and Knight have built a tremen-

dous buzz around the service by offering it for free. Registered users get a "lockable safe-deposit box" storage area with a 120MR capacity and a maximum of SOMB for any single

emerging companies Jammer. Now that the free service has "gone viral" with millions of users, says Vaughn, "it's given us an in to very large corporations that need additional services, probably use high-speed, private [wide-area IP petworks] and are willing to pay for it."

The company sells a subscription service for \$35 to \$50 per seat per month. In return, users get additional storage space, better activity tracking and the ability to collaborate across the Internet

Analysts at Gartner and Stamford, Conn.-based Meta Group Inc. predict the market for such services will eventually take about one-third of today's global document-deliv-

For now, Wadsworth is content to use the free service. "It works, and it's free," he shrugs, 9 the buzz

#### Mail Merge

Online file storage and del coming an internet sweet spot; many

companies are passed to grab market share. Gartner Broup analysis say life delivery is becoming a growing industry as compressions turn to high-speed on vate IP networks to share business-to business data. Here are fives companies to wetch for:

Turnbleweed Communications Corp. dwood City, Calif want tumblewood com

Tumbleweed's secure business di ment delivery lacks some of Click? send's collaboration and auditing capa bilities. If susing a pay-per-use mode that's probably better suited to small or rations. But its powerful partnerships including amonufacturer deal that change standard for mail grants like All lanta-based United Parcel Service of America Inc. and Stamford, Conn.-based Pitney Bowes Inc., definitely give the company room to expand in Click? send's direction

#### DocSpace The DocSpace Co., San Francisco www.docspace.com

Ortical Path Inc. a Son Francisco-based messaging provider has been on a buy ing sprice that includes Remarq, a provider of anime colleboration serve and internet faving service FavNet, it closed the acquiration of DocSpace last month, Couple those buys with Critical Path's own secure messaging service. and the company has the potential to become a one-stop shop for virtually all large-scale electronic data delivery. At the moment, those services are still secretar and Critical Path has yet to announce a

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www.netdocuments.com NetVovage's NetDocuments service focuses on storing and working with documents online, instead of on local hard drives. The company has onboars voleran document management build and so for her transferred much of that

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# Driving The E-Train

Business-to-business e-commerce is where the hot action is, and e-commerce networking professionals like Commerce One's Rupa Joshi are the folks making it happen. By Bronwyn Fryer

> lions; 2.7 trillion of them, to be exact. That's the number of dollars that the business-to-business e-comrce market will reach by 2004, according to Gartner Group Inc. in Stamford, Conn. These days, involvement in building business-to-business e-commerce systems is the electronic business together.

RILLIONS AND tril- | sweet spot for networking professionals, who have an opportunity to make their mark in ways they've never dreamed of

One company riding the e-commerce wave is Commerce One Inc. in Pleasanton. Calif., a builder of XML-based products, portals and services for companies wanting to do er Rupa Joshi's job is to over see the performance and availability monitoring for Commerce One's bosted sites (Buy-Site, MarketSite and Market-Site net)

"The sites have to work in partnership to handle large volumes and other stressful conditions," she says. "My job is to look at performance from an end-to-end perspective and ensure that the systems can handle high concurrency and transaction load through the

Internet at peak performance. Previous experience: Technical director at Charles Schwab & Co., overseeing the performance of the Online Trading System. Joshi also spent several years in performance management of applications, systems and networks at Charlotte. N.C.-based Bank of America Corp.

Impact on company: No highperformance network, no com pany. "Gone are the days when performance was done after the fact, when something broke down. Now you have to design everything as a system. An application has to be designed with response time in mind. Huge server farms, with creative load balancing and fault tolerance, pesotiate a browser's clicks through a maze of application and database accesses, cached data and network paths. Everything has to work together in partnerships." Skills needed: A combination

of many Joshi has several years' worth of in-depth experience in performance, availability, capacity and planning, as well as in troubleshooting applications. In addition, she says. "You have to be hold and ready to take decisive actions.

be a team player and think big." Salary, bonuses and perks: Engineers who understand performance end-to-end are hard to come by," says Joshi. Salaries start at \$90,000 and bonuses are at least 10% to 20% of salary. Stock options can be part of the package, too. For Joshi, job satisfaction is an additional perk.

Future opportunities: "Im-mense," says Joshi. "For somebody doing end-to-end performance, understanding the architecture of the application, network and all systems is crucial. Work like this also gives exposure to production prob-

Have a vision. Think big, and develop a great understanding of ... systems end-to-end.

RUPA JOSHI

lems, capacity planning, monitoring and network manage ment systems. All this information opens up remarkable opportunities. One can aspire to become a technical director/ vice president, CIO or engineering manager. You can be

what you want?"
Challenges, risks and rev Keeping up with the pace of technology change and learning as one goes. "I love learning, and if you want to learn, then this is where you want to be," says fosbi Advice to others: "Have a vi-

sion. Think big, and develop a great understanding of and expertise in systems end-to-end. Be willing to learn and work hard. Be a decision-maker."9

Fryer is o freelance writer in Santo Cruz, Calif

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# IT Careers in

# E-commerce/E-business

Every use of technology has its day as a star. For e-commerce, the day has just begun as individual users and businesses see entirely new apportunities still unfolding in the industry. It's not just a day as a star — it will be more. Much mare.

by Carole Hedden

#### Amazon.com Seattle, WA

\*\*Communication complete compl

and a store of humar — that's important because we are working herd."

Asia Charachery, memogra of suchesical recruiting, which that the company door need deep technical expension for such and application development with additional apportunities for those with home KTMA,

sportun for such and explication development with additional apparaumlies for those who have HTML, atvecting, infrastructure and broadband experience. "We are halders, not examiliars," says Roseman. "We are doing sings, that have more been seen

before. We believe that we've only seen about 1 to 2 percent of what e-commerce can do. Here is on one out there salling what we need at Amazon.com, so we've creating what will be capital later by others." Bosomon says the big attraction for a potential employee is the "newness of it all. And bosomon of that,

to appear says the top difference for a potential complexes in the "esercess of it oil, And boconess of final, there is no read paids of what your curren will be like, taking you from point A to point B. The promise is that you're not just learning about new technologies, you're doining it." Recurrence says one of the filtings that leasts like handle is the constant drive for him to be live people year for

Recurren says one of the inlens that keeps him humble is the constant drive for him to their people securior than himself. That if work hand, make listeny, and people will work out for you. While you're working an some renier ground-breaking project, your supervisor is alwesty working on how to hally you take a break when it's over?"

# Berbee Information Networks Corporation Madison, WI

Behind Condition on emong the first seconded a commerce size in the betweet's young bistory — these is a compare providing hadensing seperties to further but had been between a traditional retail days and the sizes start in the size of the size o

Frended in 1973 with one employer. Precident and CED lim Barbar. Durbar has grown exponentially, and first are plan to death as required to precide the control of the cont

Provide (IDP), providing serve and applications assumpaneet, integrated services, release's source's and data ventralisation in the service and extra term of the service and 
Mich says there is on shortege of IT inneration or Barbon, a fact that bades well for tach forceast employees and solution-driven customers. "We've found that the best way to grow and keep besidens in to choose austomers who are 'up to something'. By doing so, we retain current staff, and are able to attract

new people. We make som we have exchanges who are interested in new and integrating things."
Michale Scheller of the People Department upps factore series was developers, interest erablects, and
evisiones margins. "Recreas ment of our positions are existenter focing, we amplicate communication skills and
looiness experience. And, or with our continuer, we're looking the people who are 'up to samething'—who

have gone beyond job duties, people who have had an active role in developing their covers and who find solutions to real problems."

Secretor or two presums.

More than technical delle, though, Berber seeks a lors-templife attribute: a good cultural lit. "He continue outly office to preserve ser cultural," says Meth. "Se see find people who can edupt to change, who have a track record for reinventing theresalves, or well or their skills. "Toward that and, Burban offices frees weeks of

anned training.

It must be working: Berbare boests a 94 parcent employee naturalism rate. "We hive people who was date sharers, farmedly and informally," says Schaffler. "This common to send out a global a-mail leads Barbon, requesting ideas and experisonous to

find a selection — and then being inundated with replies. That's the kind of piece Barbon is." Macroone, when it comes to deciding which fill company to work for, onlines is a critical factor in

Berbee's Save. "Sout and support of every individout's judgement is a company principle," the says. "Things don't get find down here by committees and structure for toe long before we invoke that principle."

Structure for too long before we invoke that principle.

Senters and position for 1 energing here - rather, it's the ability to do new things and to go on for any your releasts will take you," says Schaffler, Historychy is a moreoury will of parts — in the catent that even

# In letter web from a calife. CosmoCom Melville, NY

One of the biggest concerns about e-commerce transactions is the lock of human context — gating possescome your questions and others your concern in a fundar, represents usuases. This is the very need that Consulties most. "Consulties was funded to obtain this too in the internat resolution." Say Real Publics, Consulties describe of human resource. "The provide or cont-effective assesses of bringing the human touch — line continues service — take was."

The energet, funder in 1975, instend with its over product Consolid, and it Supunitus 1999, introduced Consolid Biomers. Vicensical Biotecus is truly the sensed on an indexingent and the travers consolid an intended section of the consolidation and the form of the form

Except an continues can install the product by compact dick, make some slight automizations and be up and remains within a day. "We have the daility to integrate with automost; other back-office operations, officing added value and once of use," add; Yalians.

One do part film ments, Committan's staff has grown by 50 percent. "We's it is usual growth cape," says before. The mightly depiction we effer in a behavior support service — puspic where the highly of position we effer on in behavior support service — puspic where and head of the minimum service are the behavior of support is resention or behavior and the minimum service are the benevit, who continuing hypoth has well used headquarts present the substitute of the service are service as the forester, who continuing hypothe distribution are the substitute of the service are the servi

"There's an question that technical professionals have a tramerdous selection of employment unities," said Tallione. "At CosmoCom, you'll find an entering team of people who leel strongly about the company. Ma're working on the world's most excelling technology in terms of multi-media advanced intelligent networks and a commerce. People here are bonds on and creative "

#### The Gartner Group Stamford, CT

The IT states is filled with companies ready to provide the manpower, the thinking, the integration and the product, Just to flow are dedicated to research. Among them is Contract, based in Stanford and providing service to Fortune 1000 componies.

Maria Zaczes, group vice president-workheide stoffing, is biring approximately 150 essectors per menth excess Genteer's business units. "Genteer has been a traditional research company," she says. "We were great at identifying technologies and trends



and how these would play a part in business infrastructure. We were highly recreeded and our stock salit three times in under two years.

As with most businesses, however, Sortno is reinventing stell for the new millernium. The "think tenk" of the IT industry is now toronting

pride e resource to every professional or execufire involved with decision making, giving them the latest information on technologies, uses, and

To reach this extended codience, Gertner recently acquired lack Republic, a del-com operation that

will play Serious to reach more than 400,000 II profe So how do you him the III gurus who serve III professionals? "We have three strategic business tives," explains Zarzes. "The first is in developing our own web capabilities. In the past we provided research through unities enalysis and CD-ROMs. We're now edilizing the web not only to serve as an exten sion of our distribution channel, but also as the primary means by which our clients interact with us." For this unit, Gartner is looking for people with web development skills who also understand the information delivery industry. "Will continue to enhance and suprove our web site to take advantage of the latest technologies.

so there will always be a challenge and a need for people who like to work with new took," adds Zorzes. The second initiative at Gartner is to re-energize the company's research to deliver relevant and tion resiliers designed to lead business associates through the mans of technology states they face. "Ma're hiring at all levels, from new MAAs to high-powered executives who know the power of alogy as it applies to business," she says.

The third initiative at Gasteer is growing the services organization, a consulting group that helps clients

To enable all eroes of this evolving business, Gortoor is looking for people with interactive web present experience, for consultants who understand the breadth and depth of industry sectors and who persons extensive technology expertise, and for research analysts who can write, present, and formulate aghi provoking positions based on their research findings and are then obje to deliver it to the too scholars of the plobel merket

The company distinguishes itself by offering life belonce, with consultants traveling only 30 to 40 reset of the time and allowing individuals — even in key loodership roles — to work from their choses location. "And, you'll continue to be a learner become you're discovering and researching what the next trends will be and how to apply them," says Zarzon

In addition, Genteer is developing on in-house learning program to exist with critical research and ting skills. "For il be in the thick of the letest technologies, but strengthening critical operational skills is what we'll be covering in Gartner University. And, after five years, professionals are artified to a four-week subhetical in addition to their vacation. We also offer a variety of projects and client relationthips with the top companies around the world. You'll generally be working directly with CEOs and CIOs. You'll be called upon to provide research and advice about entire industries and trends, but you'll also be and to take that conversation down to the datals — the actual configurations of technology and how

"The bottom line is that you'll be among the leading thinkers in the industry, making a name for voorself as well as for Garton."

#### Intershop San Francisco, CA

Six years ago, when the term a business was an "not there" reference to some electronically enabled ming system, intershop operad its doors to offer the liest e-commerce software.

"Me were there even before the market was ready," says Ed Collan, vice president of marketing. "We've had to relevant the company a couple of times, but we remain at the ferefront." In the more recent past, latershop provided its software for a business through Application Service Providers, such as Nortel and Mindsprine, Intershee products allowed the ASPs to host a commerce storeferent for small to mid-stand businesses

Newever in 1999, the company torond again to its leadership in developing the enabling software for a-commerce, letershop Enfinity, the newest product, has taken the market by storm, providing on e-commerce capability for the largest of comp-

This new product puts as in a new market, where accounts are worth multi-millions and the brand names are very recognizable," says Callan. "The result is that our hiring has had to ramp up very aggres svoly," adds Callan. The company has offices throughout North America, in Asia (Hong Kong) and in Europe We not workern with American and interpolicand partners and un're constructly in the midst of product development - whether entirely new products, next generation products or product only

Jeff Leverana, director of information technology, says biring is under way not only in II and angiing, but also in sales, merketing, human researces and linence. "Our greatest challenge is responding to this explosive prouth." he exploire. "My key cool for this year is finding people who can help or expres evolubility and accessibility to our network, providing the infrastructure intershop's toors needs to operate in the most effective manner pessible." The infrastructure will include development of a web portel.

Leveroni says the company it leaking for people with core technical skills, web experience and leternet experience. "We need people who are quick starters and who can message conflicting demands on their firms and resources. There is always something happening. If you se the kind of person who needs to know what your job will look like a year fram now, this may not be the place," he exist

le January, the company hold a three-day Intershap University. "We spent three days tolking about what the future of a commerce will be and how to communicate that as broadly as we can," Leveroni reports "It's on important message and we took the time to make some everyone understands it."

Colon and Leveroni point to the intershop environment as the primary plus for employees. "There's a sense of energy," says Collen. "We're small enough to maintain that start-up feel and where you can make a difference from day one. At the same time, we're past the stope of baging to get funding to make payred. "We have the ability to over-challenge every single member of the intershop team," Callen says.

There are training courses, but the most important thing is your apportunity to work at the cutting edge

"We're at the white but center of the bottest market around, and we lead that market. It's an incredble along to be "

#### NetworkOil Houston, TX

In the of heavy town of Fourier, a besides called NetworkOF might be microken for just another pt. It's more. John Easts, chief technology efficar and CIO, says NetworkOI is just seven mentic old. floring on soline merketplace for the patroloum industry. This is an industry where reinferentips are investments and phones and fexes are the seams of neg

alou," say Kaca. "The HetworkDi marketplace is set up to improve the efficiency of the procurement mass by delivering a dynamic business solution that supports enline wonder/costomer relationship. On the bayer's side, of and gas companies will find a greater number of suppliers to meet their equipment speci ation needs and enjoy extensated tracking and reporting. On the suppliers' side, it allows the sales person to facus on solutions while building or recintaining the relati

Letet typy the entire concept is a good in far a concervative, tragmented market. "Our not market oddresses this world of technical and highly-engineered equipment. We're not tellung about beying paper cips or effice supplies — files is made-to-order, praction equipment for demanding field and, "he explains, in addition to the enline purchasing rayubility, Natural OII is offering links between all companion that

have surplus equipment and those who may need the equipment The company was founded in September, development work began in October and we are now in our second round of pilot transactions, with just 100 amployee," East notes. "We plan to hire 200 more people this year. We need good technology project managers, developers, people experienced with Java and sh oriented design. We also need berieves analysts who will work to enhance our capabilities, and we'll reed infrastructure, architecture experts to integrate our systems and business process expertise to ensure we are

oble to improve the efficiency of the way business is done." The company is looking beyond technical experience. "We look for an interesting range of expeocces that demonstrate creativity and immunotion," Kneet says. "And because we are growing so quickly with minimal structure, we need people who can impare themselves and others. It's an exhibitating bland of choos and regularly

East is apprecise about training and career development and attract. Top tolent through the lurz of pre-IPO stock aptions. "We need people to be passionate afrost the technologies we are using and the way we are using them. And became we're small, we can offer a broad range of varied appartunities and challenges. A new recruit may sign as as an analyst, but may find binned pitching is with MTML. We want our amployees to use their every skill and then expend them even further

The culture at MetworkSG is a corefully considered combination of techno sorrry with oil and gas tradton. "GG is an industry where people still do business on the basis of a bandshake and the bosons and busts have maintained the entrepreneurial spirit;" Koast says: "Adding a business into the equation intensifies the nexts of rick and rewords that mode the off and gas business what it is today."

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# Security Concerns Boost Vendors' Value

Network Associates. Symantec see stocks rise

OMPUTER VIRUSES like Bub-

ble Boy and Melissa, along with a spate of denial-ofservice attacks on popular Web sites like those of America Online Inc. [NYSE:AOL] and eBay Inc. [Nasdag/FRAY] have pushed the issue of security to the front burner at com-

panies worldwide. They've also belped to raise the stock prices of security software vendors Symantec [Nasdaq:SYMC] and Network Associates Inc. [Nasdaq:NETA] Last week. Network Associates' stock hovered

around \$31 per share, up from the midteens last May Symantec's price, meanwhile, has shot into the \$70 range, up from around \$20 last May Yet in both cases, there's more behind the steady increase in value than

Safety First SYNAMTEC CORP

Location: Cupertino, Calif Key products: Norion Internet Security 2000 Acrion Anti-Virus 2000

FY 1999 revenue: \$534 million · RETWORK ASSOCIATES INC.

Location: Senta Clara, Cult Key products: McAfee antiving software. Snifter not work monitoring software. Magic Help Desk software FY 1999 revenue: \$683.6 milion

Analysts cite Symantec's April 1999 appointment of CEO John Thompson

- a well-known, experienced executive at IBM [NYSE:IBM] - as another key factor in the company's success. "He's focusing the company oo the corporate and enterprise market as opposed to retail. He's also emphasizing network security, which is very important as companies participate more

and more in e-commerce over the Internet," says Rick Davis, an analyst at Richard W. Davis & Co. in Plano, Texas. Those initiatives,

with Symantec's other big focus oo Web site and e-mail filtering software, makes the company "a strong Buy on my list," says Anroo Scott, an analyst at Advest Inc.

[NYSE:ADV] in Hartford, Conn. Analysts are more cautious about Network Associates, which in December spun off McAfee.com Corp. [Nasdaq:MCAF] as a consumer-oriented PC services application service provider. Network Associates still owns between 70% and 80% of the Santa Clara, Calif-based antivirus software

vendor however "We're not pounding the table on [Network Associates'] stock, but we are warming up to it," says Kevin Wasner. an analyst at Adams, Harkness & Hill Inc. in Boston.

One big reason is the McAfee spinoff, which has a market valuation of nearly \$2 billion. Another, says Wagner, is "solid fourth-quarter earnings and a lot of new attention to myCIO.com." a Santa Clara-based application service provider that Network Associates stunched to offer network-monitorine

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> Staff Columnia: Front Player (500) (502-070) Columns Belley: Rev San (500) (502-070) PEATURES POLIORS Several Projects Editor - Clair Factoring (200) 820-8204 Bentama - Russell Say (200) 820-825 Publi Separit, meneral, - Conthe Morgan (200) 820-8279

IT companies State See (SDE) 800-818 IT Comm. Good III Weiter (SDE) 800-8180 FEATURES WRITERS Georgi H. Anthers (2002) 367 (2004) Mart Humbler (2008) 2009 (2007) Kurtilarer Matematika (2008) (2009 (2008) Marti S. Marth (2770) (2709 (2008)

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# NEWS

Continued from page 1

## Aerospace

place is being built on software from Commerce One Inc. in Walnut Creek, Calif. Oracle Corp. is also involved in the auto exchange.

Executives at the companies said their goal is to move as much spending as possible to the exchange to reduce costs. "In short, this will transform the way we do business," said Phil Condit, chairman and CEO of Seattle-based Boeing.

But unresolved issues remain. For starters, the final cement remains unsigned by the four founders, and some observers question how fast these companies can move.

"There's a contradiction in the personality of the aerospace industry. They've always been associated with technology at the leading edge, but [they're] also extraordinarily conservative," said Craig Schmitman, editor of AeroSpaceNews.com's Leading Edge, an industry news service in Ojai, Calif.

#### Commerce One to Port Unix, Oracle Commerce One Inc. will port its

Unix operating system and Ora-cle Corp. database platforms sometime in the second half of the year, according to Commerce One. The products run strictly on Microsoft's Windows NT and 2000 operating systems and SQL Server database. To date, Microsoft's involve

ment in recent large business-to-business exchanges has been tied to the success of e-commerce Software vendor Com-merce Dive in Walnut Creek. Calf. According to the company's product manager, Kyung Kim, product manager, nyung rure, Commerce One's "larger custo-mers" have requested that the company offer more configura-tion options, and the plan to port is a response to that rether than a move eway from Microsoft. Analysts and integrators said

verce One is long overdue for a change of strategy.

- Christine McG

AT A GLANCE Largest B-to-B Exchange

Partners: Boring, Raytheon, Lockheed Martin, BAE Systems Target industry: Aerospace and delegan

Total annual sales industrywide: \$400B Partners' combined purchases.

\$71B/year Technology platferer: Commerce One.

Due to Isunch: Midyour

Only 18 months ago, a significant number of aerospace companies hadn't yet provided their employees with Internet access, Schmitman said. Aerospace companies "have-

n't really been on the cutting edge," agreed Richard Abou-lafia, an acrospace analyst at Teal Group Corp. in Fairfax, Va. "But efforts like this prove they're headed in the right

A spokesman for Cincinnati based GE Aircraft Engines, a \$10.6 billion manufacturer that supplies about half of all aircraft engines worldwide, said the company has yet to decide how it will participate in an Intern based industry exchange. Also undecided is whether General Electric Co.'s aircraft unit will participate in more than one exchange, he said.

In February, United Technologies Corp. (UTC) and Honeywell International Inc. announced a joint venture called MyAircraft.com. This week, Lexington, Mass-based Raytheon will launch EverythingAircraft.com. (see story

at top right). "You're going to see a series.

of announcements (regarding aircraft and defense exchanges). Everyone is looking for a value proposition," said Honeywell CIO Bill Sanders. But Sanders also suggested that there could be some consolidation and partnering

among the various sites. For now, GE Aircraft Engines is "ralking to Boeing, Lockheed, Honeywell and UTC, but we haven't made the plunge yet," said company spokesman Rick Kennedy.

He added that GE is looking to be more of a supplier than a buyer on any Internet ex-

"We're already pretty self-sufficient on the buy side," Kennedy said, noting that GE aggregates purchasing across its various units, then procures goods at online auctions it orchestrates itself. In March alone, GE bought \$50 million in indirect goods at 12 different

online auctions, be said. Vance Coffman, Lockbeed Martin's chairman and CEO, said that at least half of the firm's \$13 billion in annual purchasing should eventually go through the new exchange. Bethesda, Md.-based Lockheed Martin is also lobbying officials at the U.S. Department of De-fense on the exchange, Coffman

said. They have been receptive, he said, "but they clearly want to know more about what this exchange will do."

# Raytheon's Exchange Takes Wing

Continuing as well-roll, Raytheon this week will launch Everything-largest com, an

intermet tracing exchange for the \$5 billion lessure aircraft market. The sile will initially target business users by appregating data and brokering deals among parts. suppliers and service providers. ee months from now, the plan

is to extend the site's appeal to a wide audience of consumers.

bysits to arcreft owners.
"It's for anyone lasconated with airblanes and flight," said Enc Sin-gleron. Raytheon's director of global electronic business. Singleton said Everything-Aircraft com was in development below Raytheon's partnership. before Raytheon's partnership with Boeing, Lockheed and BAE

exchange announced last Tues day," he said in the med

we want to move reported; we want to move rapidly and capture this market now." Raytheon, a \$20 billion aero-space and defense grant best known at a maker of ousee nes sies and fighter-jet radar devices, also owns Raytheon Arcosti Co., a \$2.5 billion Wichita, Kan-based maker of airplanes, including the Beach, Hawker and Bonarus Imes The company, which also

confly isunched a Web site geared toward both businesses and consumers in the locum-bouting market. "The whole Raytheon e-business and consumers in the locum-bouting market." ness strategy is to take adv of its brand strength in known as unknown reves," Singleton said.

# **Energy B-to-B Starts** Off With 15 Utilities

Touts expected industrywide online

savings for proposals, quotes, equipment

DY MATT HAMBLEN tion's largest electric and gas companies have formed a consortium to build an Internet business exchange

with suppliers. The consortium expects to announce the formation of an independent company in June, which will be followed by the creation of the business-tobusiness online marketplace by year's end, according to statements made by members

last week The yet-unnamed, for-profit exchange will be open for use by any firm in the energy and utilities industry, but the independent company will initially be owned by the founding utilities, members said.

space, with competition catching on, could get together and do this in two weeks," said Jennifer Gordon, an information technology spokeswoman for Unicom Corp. in Chicago, one of the 15 members. "Utilities are not known as being as technologically inno-

vative as a lot of industries, but with automobile and retailing roups creating business-tosiness markets on the Web. it's a logical step for utilities to move in this direction" Gordon added.

Another member of the consortium, Public Service Enterprise Group in Newark, N.J., anticipates that it will be able to make up to half its annual nonenergy purchases, which total nearly \$1 billion, via the online market within the next three years, spokesman Paul Rosengren said. According to Forrester Re-

search Inc. in Cambridge, Mass., the utility industry is al that 15 companies in the utility ready the third largest in terms of total online business trade The consortium expects to generate significant benefits for purchasers and suppliers alike by streamlining purchas-ing processes, shortening purchase cycles and increasing accessibility between buyers and sellers, the members said.

Initial services will includonline proposals, price quotes and suctions for everythine from wires to turbines to repair nervices, Gordon said. Energ itself won't be bought or sold although several of the utilities are already engaging in such online pursuits separately.

New York will assist in the development of the exchange and the selection of the technology provider, according to com-

"It's quite remarkable, really,



FRANK HAYES/FRANKLY SPEAKING

# Out of left field

T'S NOT GOING well for the Microsoft and Justice Department negotiators in Chicago. Sources close to Wrigley Field say Judge Richard Posner, who is serving as mediator for the talks, wants to wrap up a settlement in time to attend the Cubs' home opener on April 10. But the settlements proposed so far - leaked to Frankly Speaking by a source known only as Deep Left Field - show the two sides are still far apart.

Can the

DOI and

Microsoft

settle by

opening day?

Microsoft proposal: Microsoft to release the source code for MS-DOS versions 1.0 through 2.25. Microsoft Basic for the Apple II and the original Windows Solitaire game. Justice Deperment to use Microsoft Office for drafting all future antitrust actions against Microsoft, Rejected after Inel Klein sees the animated paper

clip in Office. tice proposal: Microsoft to break itself into three companies, to be headed by Scott Mc-Nealy, Larry Ellison and Steve Jobs. Rejected because Gates and Ballmer claim they can't re-

member who Ellison is. Microsoft proposal: Microsoft to let hardware vendors display a message on the opening screen of Windows 2000: "Warning: The Attorney General has determined that Microsoft may be hazardous to competition." Withdrawn when Microsoft hears that a similar warning didn't protect ciga-

rette makers. Justice proposal: Microsoft to move its headquarters to D.C., "where we can keep an eye on things," Rejected when a quick check of the phone book verifies

there aren't enough Starbucks locations in D.C. to handle one Microsoft product division, much less the whole company. Microsoft proposal: Microsoft to hire Joel Klein as vice president of industry relations. Rejected because Klein doesn't want to lose his government pension. Justice proposal: Microsoft to break itself into three companies

focusing on software, keyboards and mice. Rejected by Microsoft which insists the keyboard is fully integrated into Windows 2000 and can't be separated from it.

esoft proposal: U.S. to declare Microsoft a sovereign state, and Microsoft to grant U.S. most-favored-nation trading status and a 20% discount on all government purchases. Rejected when Microsoft won't go to a 50% discount. Audica proposal: Microsoft to break itself into

three companies, each of which will receive one-third of the source code for each Microsoft product. Rejected by Microsoft, which admits it can't find the source code for most of its .DLLs

Microsoft proposal: Microsoft to certify It holds no stock in Parker Brothers, makers of Monopoly. Rejected by Ioel Klein, saying Microsoft "seems unclear on the concept of monopoly

Justice proposal: Microsoft to break itself into three companies, each of which will release

products at random intervals unrelated to their announced ship dates. Withdrawn when Posner points out this will involve no change in Microsoft's behavior

> Microsoft proposal: Gates to make large investments in IBM, AT&T and Standard Oil in order to revive Justice Department antitrust actions against those companies and distract Justice from Microsoft Rejected by Justice as really, really unclear on the con-

Justice processi: Microsoft to break itself into three identical and competing companies, each headed by Gates and Ballmer. Rejected because the Microsoft MS-Clone technology is officially scheduled for release this

month, so the clones may not actually ship for years. Microsoft proposal: Microsoft to launch a hostile takeover of the Justice Department, buying all shares at three times market value. If the takeover fails, Microsoft to announce its own Justice Department product and register

the name "Antitrust" as a Microsoft trademark. Rejected by Posner as unlikely to satisfy the state attorneys general.

And so the negotiations go on . . . 9

Hayes, Computerworld's staff columnist, has covered IT for more than 20 years. His e-mail address is frank\_hayen@computerworld.com.

outfit just sent a long memo to the IT troops. We "must find ways to become more remble and flexible," says the CIO Translation: To cut costs, soft ware development and applican maintenance are going off-

shore. The memo promises 'new contunities" for those who can hack it as business analysts. project leaders and QA types: evenbody else is on the street But wait, don't go away mad, the CIO says. In fact, before the outsourcers take over, "consider them as members of our toam and give them your full cooperation" while they're analyzing this Toperation. Right. As one pilot

fish put it, "Would you train

your replacement in order to

get laid off?"

ANOTHER HEART-WARMER Friday afternoon, Plot fish's wife is in the hospital. He gets a call: They can barely find a pulse, and she's being wheeled into errergency surgery for internal bleed ing. He e-mails the situation to the boss and races to the hose

tal. Over the weekend he finally checks his messages. Includin the one from the bass, which be gins. "I assume that you will make on the time

PILOT FISH CHECKS Oracle's Web site looking for the answer to a detabase security question.

asked to log in. Sure, accounts are free, but fish doesn't want to bother So he tries "the ridged trick in the book," he says. "Name administrator, Pas nessent Success?

VON. DI HO. 19. WEEKS A sharp-eyed pilot fish noticed an ment that showed up in February on the Europe Commission's U.K. Web site (www.cec.org.uk/affices/em Atm) that was supposedly posted "29 February 1999" and refers to an agency "establis in January 1005,"

DEPT. OF CORRECTIONS A whole school of pilot fish wrote in to say a cooke set to 1969 is a feature, not a bug. The way to kill a cookin is to set its expiration date to the past," as one smurter-then-Sharley pilot fish explained. The machine on which it resides will then eve tually delete the cooke, but

there's airrost always a log. This is the way it's supposed Sharky may not know cookies. but he's got a fin down on Wis consin over Florida in the NCAA final. Take your shot sharky

computerworld.com. If it its, you score a T-shirt And get the daily dunk at

# The 5th Wave



'Well, well! Guess who just lost 9 pixels?

what do you want the internet to be?" Unless they actually want to."

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